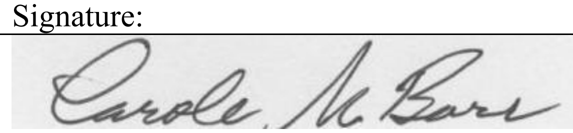
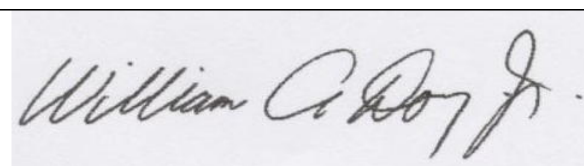
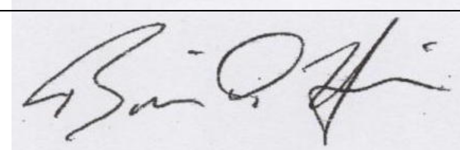
Strategic Skills Initiative Skills Shortage ID Report
Cover Sheet

Economic Growth Region #7: Western Indiana

Designated Grantee			
Organization Name:	Western Indiana Workforce Investment Board, Inc.		Telephone Number: 812-238-5616
Address: 630 Wabash Avenue			Fax Number: 812-238-2466
Address: Suite 205			Email Address: lisalee@wiwib.com
City: Terre Haute	State: Indiana		Zip+4: 47807
County: Vigo	FEIN: 35-2080570		
3. Contact Person Ms. Lisa Lee			
☐ Mr. X Ms.	First Name: Lisa		Last Name: Lee
☐ Dr. ☐ Other	Title: Executive Director, SSI Core Agent		Telephone Number: 812-238-5616
Address: 630 Wabash Avenue			Fax Number: 812-238-2466
Address: Suite 205			Email Address: lisalee@wiwib.com
City: Terre Haute	State: Indiana		Zip+4: 47807
Lead Team Members			
Name:	Industry:	Title:	Signature:
Carole Barr	Western Indiana Employment & Training Services	Executive Director	
William Dory, II	Greencastle/Putnam Co. Development Center	Executive Director	
Brian Harris	Eli Lilly-Clinton Laboratories	Six Sigma Manager	

Ed Ping	AFL-CIO	Community Services Activities Labor Liaison Representative	
Dr. Jeff Pittman	Ivy Tech Community College	Chancellor	
Wm. Michael Steed	Great Dane Trailers	Human Resources Manager	
Lawrence J. Tempel	Growers Co-op	Agronomy Manager	
Steve Witt	Terre Haute EDC	President	
Lisa Lee	Western Indiana Workforce Investment Board, Inc.	Executive Director, SSI Core Agent	

Economic Growth Region #7: Western Indiana

Report 1: Strategic Skills Initiative Skills Shortage Identification

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Executive Summary

EGR 7 STATEGIC SKILLS INITIATIVE
EXECUTIVE SUMMARY

The Strategic Skills Initiative "Skills Shortages Identification Report" for Economic Growth Region (EGR) Seven is a comprehensive economic profile focused on achieving two critical goals established by Governor Daniels: jobs and employment growth and personal income growth for the Hoosier workers of Western Indiana. This is the first in a series of three reports which will follow a logical "line of sight" process resulting in the establishment of a systematic approach to enhanced economic growth and competitiveness for EGR 7. The "Skills Shortages Identification Report" identifies and then quantifies workforce shortages in high wage, high skill occupations linked to key industries or clusters within the region. The information and data contained in this report is the culmination of hours of research, interviews, focus groups, and summit discussion. This work would not have been possible without the support and participation of community leaders throughout the region.

Economic Growth Region Seven is composed of Clay, Parke, Putnam, Sullivan, Vermillion and Vigo counties. The economy of this region is quite diverse, which a competitive advantage in itself. The drivers of the local economy include, but are not limited to, manufacturing, retail trade, health care, educational services, life sciences, and construction. Manufacturing is the largest industry sector in the region. Within manufacturing, the region holds strong competitive advantage in the areas of plastics and rubber products manufacturing, transportation equipment manufacturing, and chemical manufacturing.

Upon completion of a thorough review and analysis of all key industries and/or industry clusters of the region, and taking into account factors such as projected growth, competitive advantage, our industries' position to capitalize on regional, national, and global trends, and local economic growth strategies, the SSI Executive Committee and Consortium members selected manufacturing, health care, and biotechnology – life sciences as the three areas of focus for this initiative. Within each of these areas an occupation or occupations were identified as areas of critical shortage which will seriously impede the economic growth and competitiveness of the region if not addressed immediately.

It should be noted that the three industries selected through this extensive process also align themselves with the industries targeted by the state for growth, and those identified as part of the President's High Growth Job Training Initiative. Successful completion of this initiative will result in a market-driven economy, which ensures a quality workforce, enhanced productivity, and economic competitiveness. Those involved with the SSI opportunity look forward to the next phase in this journey.

Methodology

OCCUPATIONS AND SKILLS SHORTAGES REPORT METHODOLOGY

This report was prepared by staff of the Western Indiana Workforce Investment Board, Inc. in response to Governor Mitch Daniels' Strategic Skills Initiative. This initiative offers Economic Growth Regions the opportunity to exam, identify and quantify occupational and skill shortages, and later determine the causes and look for solutions to these shortages.

A variety of primary and secondary data sources were used in the compilation of this report, as were a variety of methods. These sources and methods are outlined in detail on the following pages and noted occasionally throughout this report.

Review and analysis of secondary data was the starting point for this project. The statistical data was reviewed and tabulated to determine key industries in the region. Many supply side comparisons were also drawn from secondary data. Location Quotients were used to determine comparative advantage. Regional shift share analysis was used to determine industries that have a competitive advantage. The training that provided us the ability to use this type of analysis has made this a truly local study and allowed the process to be institutionalized.

Primary data collection came from a variety of sources, including reports and studies compiled by and for local groups such as post-secondary institutions, community agencies and the Workforce Investment Board. The Eriss Survey was used, as was a telephone survey of local health care providers completed by the Workforce Investment Board. Responses from the three focus groups, one on one interviews, a survey and the industry summit also provided precise and reliable local data for both demand and supply side issues.

Worksheet Methodology

Demand Side Worksheet

EGR7 took a number of variables into consideration while completing the Demand Side Worksheet. As recommended by SSI's Research and Identification Guidebook, EGR7 first referenced the egr7projections spreadsheet. This approach was sufficient in providing an overall occupation need based on both growth and replacements. However, the spreadsheet was not capable of providing replacement frequency for specific industries. Using both ERISS data through SSI's website and the Occupational Information Network's website found at http://online.onetcenter.org, EGR7 was able, when necessary, to calibrate future job opportunities based on national and state level growth and replacements to EGR7. From the initial point of departure provided by these numbers and primary data collected through both focus groups and phone conversations with local industry, EGR7 developed a Demand Side range for seven different occupations. With the exception of Respiratory Therapists and Radiological Technologists and Technicians, primary data provided projections noticeably different from EGR7's secondary data research.

Supply Side Worksheet

Supply side information, particularly the pipeline of future employees, was compiled using mostly primary data from local higher education institutions. The collection of this information consisted of phone calls and conversations with local institutions of higher education. The information requested related to the number of programs offered that would prepare an employee for jobs within EGR7's critical occupations, number of students graduating from those programs, and the percentage of students that leave the area for either jobs elsewhere or further study. Information gathered during the conversations with the local institutions of higher education was recorded on the Supply Side Worksheet. Information relating to the percentage of students that stay in the area or leave was fed into the net-migration section of the worksheet. Overall, EGR7, as is further illustrated by the US Census, has a negative net-migration. This negative net-migration could be a worthwhile topic of study during the root cause analysis in Phase 2 of the Strategic Skills Initiative.

Net Calculation Worksheet

The Net Calculation Worksheet automatically populated with respect to information provided in both the demand side and supply side worksheets. As is explained on the worksheet, a negative number represents a surplus of available labor and a positive number represents a deficit of available labor.

This report is a compilation and consolidation of all the data gathered and reviewed that focuses on critical workforce needs in Western Indiana. This report would not have been possible without the support, critique and guidance of the SSI Consortium, the SSI Executive Team and our many partners in communities throughout the region. Their feedback and ideas have been invaluable to the entire process.

I) Secondary Data Sources

a) Literature
- National Association of Manufacturers
- Indiana Manufacturing Association
- Federal Reserve Bank of Chicago
- Bureau of Economic Analysis
- North American Industry Classification System
- "The Competitive Advantage" by Michael Porter
- "The Jobs Revolution" by Steve Gunderson, Roberts Jones, Kathryn Scanland)

b) The SSI Toolkit

c) Other Data
- Indiana Coalition on Housing & Homeless "2005 Living Wage Report"
- Erris Report
- BLS and LMI reports
- US Census Bureau
- O-NET
- Indiana Commission on Higher Education
- BioCrossroads Committee Reports
- Vincennes University
- Indiana Chamber of Commerce
- Reports prepared for Indiana Health Industry Forum by Thomas P. Miller & Associates and Hudson Institute
- Federal Reserve
- Department of Labor
- Rochester Institute of Technology "Assessing Workforce in the Bio-Technology Industry
- Work Keys job profile data

II) Primary Data

a) Reports
- 2002 Regional Technology Strategies Regional Cluster Analysis
- 2004 Pathfinders Study
- 2004 Compass II Report
- 2004 Department of Commerce Regional Analysis
- Ivy Tech Community College - Enrollment & Graduation Reports
- Indiana State University – Enrollment & Graduation Reports

b) Summit
- 2005 Wabash Valley Advanced Manufacturing Cluster Survey Summit

c) Surveys
  - 2004 Wabash Valley Advanced Manufacturing Cluster Survey
  - 2005 Wabash Valley Advanced Manufacturing Cluster Survey
  - Health Care Provider Telephone Survey
    - Bethesda Gardens, Terre Haute, IN
    - Clay Health and Rehabilitation Center, Brazil, IN
    - Cloverleaf Healthcare, Knightsville, IN
    - Davis Gardens Health Center, Terre Haute, IN
    - Harborside Healthcare, Terre Haute, IN
    - Heritage House of Clinton, Clinton, IN
    - Millers Merry Manor, Sullivan, IN
    - Parke County Residential Care Center, Rockville, IN
    - Putnam County Hospital, Greencastle, IN
    - Clay Community Hospital, Brazil, IN

d) Interviews
  - Dr. Jeff McNabb, Indiana State University, Assistant Dean College of Technology
  - Kenneth Hutchenrider, Regional Hospital, Chief Executive Officer
  - Ms Lea Anne Crooks, Ivy Tech Community College, Regional Director of Workforce and Economic Development
  - Mr. Chris Williams, Ivy Tech Community College. Technology Instructor
  - Ms Regina Stearns, Sullivan County Hospital
  - Clay Community Hospital, Human Resource Department
  - Dr. Arthur Halpern, Indiana State University, Former Chair of Chemistry Department
  - Dr. Charles Amlaner, Indiana State University, Chair of Life Sciences Department
  - Mr. Kevin Jenkins, Pfizer Manufacturing
  - Mr. Mike Chumley, Union Hospital Human Resources Director

e) Focus Groups
  - Regional Manufacturing Skills Alliance
  - Terre Haute Economic Development Corporation Life Sciences Coalition
  - Wabash Valley Economic Development Organization
  - Youth Council

III) SSI Administrative Guidance
  - SSI Consortium meetings, discussions, draft review, and comments
  - SSI Executive Team meetings, discussion, draft review and comments
  - Wabash Valley Advanced Manufacturing Cluster membership draft review and comments
  - WIB Planning Committee draft review and comments
  - Participation in all Workforce Associates Webinars

Regional Manufacturing Skills Alliance Participants

- Aisin Brake and Chassis
- Allomatic Products
- AET
- Great Dane Trailers
- Ivy Tech Community College
- Western Indiana Workforce Investment Board

Terre Haute Economic Development Corporation Life Sciences Coalition

- AP & S Clinic
- Danisco Sweeteners
- Eli Lilly & Company
- Hamilton Center
- Pfizer
- Terre Haute Regional Hospital
- Union Hospital
- Terre Haute Economic Development Corporation

Wabash Valley Economic Development Organization members

- Ed Cole – Vermillion County Economic Development Council
- Bill Dory – Greencastle/Putnam County Economic Development Corporation
- Kristin Clary, Parke County Economic Development Corporation
- Claudia Tanoos- Terre Haute Economic Development Corporation

Youth Council Participants

- Paul Kelley II, Director, Western Indiana Community Action Agency
- Joe Wey, Director Parke Vermillion Interlocal
- Carole Barr, Executive Director, Western Indiana Employment and Training Services
- Mike Hagameyer, Executive Director, Brazil Housing Authority
- Pam Turner, Executive Director, Putnam County Youth Development Commission
- Mike Smith, Owner, Rosenblatts Department Store
- Bev Bitzegaio, Professor, ISU School of Technology
- Fern Cawley, Head Counselor, South Vigo High School
- T. J. Clinkenbeard, President, American Outsourcing
- Mary Ann Clark, Director, Terre Haute Housing Authority

Defining “High Wage”

DEFINING "HIGH WAGE"

Education and skill level play a large part in determining income. In fact, one means of measuring a region's success it to look at the proportion of resident's who earn a wage at least enough to purchase life's necessities – a living wage. It is for this reason that the 2005 living wage rates were used as a baseline for the minimum wage rates occupations targeted by this initiative should pay.

The 2003 average wage per job in EGR 7 was $28,369.00. The 2003 average wage levels for the state and United States were $33,379.00 and $37,765.00 respectively. Today, while the wage rates of the region continue to lag behind that of the state and the nation, the cost of living is somewhat lower in this area, as is demonstrated by figures taken from the 2005 "Indiana Self Sufficiency Standard: What it is and why it matters," published by the Indiana Coalition on Housing and Homeless Issues.

County	**Hourly wage needed for single working adult**	**Hourly wage needed for a single parent of an infant and a school age child**
Howard	$7.28	$14.99
Lake	$8.11	$16.69
Marion	$8.22	$17.91
St. Joseph	$7.47	$14.58
Vanderburgh	$7.47	$13.99
Vigo (Center of EGR 7- MSA)	$6.84	$12.43

Source: The Indiana Coalition on Housing and the Homeless Issues

Within the counties that compose Economic Growth Region 7, there is variation in the cost of living. While rates are similar, the lowest cost of living appears to be in Sullivan County, while the highest cost of living in the region is in Putnam County.

2005 Self-Sufficient Wages*

County	**Hourly Wage Adult**	**Hourly Wage Adult, Infant, Preschooler**	**Hourly Wage 2 Adults, Preschooler, School age**
Clay	6.62 (13,992)	11.55 (24,385)	7.66 per adult (combined 32,349)
Parke	6.81 (14,387)	11.36 (23,999)	7.61 per adult (combined 32,160)
Putnam	7.37 (15,556)	12.91 (27,263)	8.32 per adult (combined 35,140)
Sullivan	6.20 (13,095)	10.66 (22,504)	7.40 per adult (combined 31,256)
Vermillion	6.23 (13,166)	11.07 (23,372)	7.32 per adult (combined 30,918)
Vigo	6.84 (14,437)	12.43 (26,257)	8.07 per adult (combined 34,087)

*Source: Indiana Coalition on Housing and Homeless Issues
"Self Sufficiency Standard calculates how much money working adults need to meet their basic needs with out subsidies of any kind."

The Annual Average Industrial wage rates for the region also, with the exception of Vermillion County, are below those of the state average.

Annual Average Individual Wages 2003
All Industries*

County within Region	State	Difference
Clay $24,499	33,376	-36.2%
Parke $21,717	33,376	-53.7%
Putnam $26,677	33,376	-25.1%
Sullivan $25,771	33,376	-29.5%
Vermillion $34,988	33,376	4.6%
Vigo $29,420	33,376	-13.4%

*Source: IDWD

The median wage for each of the occupations targeted in the EGR 7 SSI Report exceeds the minimum hourly wage for the region in the highest category reported in the Indiana Coalition on Housing and Homeless Issues 2005 study for this region, which is $12.43 per hour or $25,854.00 annually.

EGR 7 SELECTIONS FOR DEVELOPMENT

SECTOR & OCCUPATION	HOURLY RATE	ANNUAL MEDIAN RATE
Health Care:		
Radiology Technician	18.62 per hour	($38,740.00 annually)
Respiratory Therapist	20.32 per hour	($42,279.00 annually)
Manufacturing		
Maintenance/ General	14.94 per hour	($31,075.00 annually)
Maintenance/ Machinery	18.01 per hour	($37,461.00 annually)
Electrical/ Electronic Repair	22.02 per hour	($45,802.00 annually)
1st Line Supervisor/Manager	25.50 per hour	($53,040.00 annually)
Life Sciences		
Chemical Technician	16.35 per hour	($34,000.00 annually)

Selecting Key Industries/Clusters

Selecting Key Industries and/or Industry Clusters

Question 1: Which Industries in this area employ the greatest number of workers?

Table I provides a snapshot of the industries in EGR 7 and the how their concentrations of employees compare to Indiana, the Midwest, and the US. This table shows that EGR 7 is slightly lower in manufacturing concentration than Indiana, but compares favorably with the Midwest and the U.S. Of the remaining eight Industries, EGR 7 ranks ahead of Indiana, the Midwest, and the U.S. in twenty of the twenty-four comparisons. Indiana, the Midwest, and the U.S. scored higher than EGR 7 in the concentration of construction workers. Workers in retail trade, accommodation and food services, and food services and drinking places, though large in numbers, do not attain a similar level of wages as employees in the other industries. The concentration in Public Administration reflects the existence of two federal prisons in Vigo County and a new state corrections facility in Sullivan County.

Table I
Industries With Greatest Number of Workers in EGR 7

Year	NAICS	Industry	Jobs	Jobs LQ (IN base)	Jobs LQ (Midwest base)	Jobs LQ (US base)
2004	31-33	Manufacturing	15,318	0.89	1.13	1.62
2004	44-45	Retail Trade	11,837	1.18	1.19	1.18
2004	62	Health Care and Social Services	10,692	1.05	1.03	1.03
2004	611	Educational Services	10,004	1.42	1.37	1.32
2004	72	Accommodation and Food Services	7,794	1.12	1.16	1.1
2004	722	Food Services and Drinking Places	7,016	1.11	1.18	1.2
2004	92	Public Administration	6,716	1.72	1.72	1.42
2004	23	Construction	3,599	0.81	0.88	0.76

Question 2: Which industries pay the best?

Table 2 identifies those industries in EGR 7 that pay the highest weekly wages. Here we find the manufacturing impact on wages this region. Three segments of the manufacturing are shown to be among our highest wage industries; chemical, primary metal, and paper. Workers in these industries earn significantly more that the average wage earner in this region.

Table 2
Average Weekly Wage By Industry 2004

Year	NAICS	Industry	Average Weekly Wage
2004	325	Chemical Manufacturing	$1,344
2004	22	Utilities	$1,232
2004	523	Securities, Commodity Contracts, and Other Financial Investments and Related Activities	$1,160
2004	517	Telecommunications	$1,054
2004	331	Primary Metal Manufacturing	$1,022
2004	928	National Security and International Affairs	$1,014
2004	322	Paper Manufacturing	$948
2004	237	Heavy and Civil Engineering Construction	$827

Question 3: which industries have been growing the fastest, in jobs? In numbers of establishments? In average weekly wages?

Several industries in EGR 7 have shown significant job growth between 1994 and 2002 with an additional 7,484 employees. Manufacturing, health care, along with social services and social assistance contributes to this job grown. Public Administration job growth was also significant with the construction of a correctional facility in Sullivan County.

Table 3
Leading Industries in Job Growth-EGR 7

Year	NAICS	Industry	Job Growth Since 1994
2004	326	Plastics and Rubber Products Manufacturing	1,692.00
2004	611	Educational Services	1,247.00
2004	56	Administrative and Support and Waste Management and Remediation Services	1,122.00
2004	561	Administrative and Support Services	1,112.00
2004	62	Health Care and Social Services	956
2004	624	Social Assistance	915
2004	92	Public Administration	864
2004	336	Transportation Equipment Manufacturing	688

Table 4 highlights Health Care and Social Services as the highest single industry with 35 new establishments. When combined with ambulatory health care services, a total of 55 new health businesses were established since 1994. Truck transportation and transportation and warehousing produced 58 new establishments. The next closest in the number of new business establishments begun were; 56 new establishments of financial service organizations; 22 in public administration; 22 in professional, scientific, and technical services; and 19 in administrative and support services.

Table 4
Industry Growth In the Number of Establishments

Year	NAICS	Industry	Estab Change
2004	62	Health Care and Social Services	35
2004	52	Finance and Insurance	29
2004	484	Truck Transportation	29
2004	48-49	Transportation and Warehousing	29
2004	522	Credit Intermediation and Related Activities	27
2004	92	Public Administration	22
2004	54	Professional, Scientific, and Technical Services	22
2004	621	Ambulatory Health Care Services	20
2004	561	Administrative and Support Services	19

In Table 5, the chemical manufacturing industry had the largest average weekly wage growth at $453.79 per week. The next largest weekly wage increase was achieved by utilities with an increase of $424.63, which is closely following by securities, commodity contracts, and other financial investments and related activities industry with a weekly increase of $405.63. The largest weekly wage changes for the top remaining industries ranged from $304 to $378**.**

Table 5
Average Weekly Wage Change 1994-2004

Year	NAICS	Industry	Average Weekly Wage Change (1994 - 2004)
2004	325	Chemical Manufacturing	452.79
2004	221	Utilities	424.63
2004	523	Securities, Commodity Contracts, and Other Financial Investments and Related Activities	405.98
2004	928	National Security and International Affairs	378.48
2004	517	Telecommunications	339.29
2004	562	Waste Management and Remediation Services	331.81
2004	322	Paper Manufacturing	318.40
2004	524	Insurance Carriers and Related Activities	304.13

Question 4: which industries will be offering the greatest number of new jobs in the next few years?

Occupations projecting the highest number of new job increases, shown in **Table 6** are dominated by three major industries in EGR 7; Health Care and Social Assistance, Plastics and Rubber Products Manufacturing, and Chemical Manufacturing. Occupation ID, 29-0000, Healthcare Practitioners and Technical Occupations, shows that 470 new jobs will be required by 2012.

Table 6
Occupations Projected to Show the Greatest Increase in New Jobs by 2102

Industry title	NAICS	Occupational ID	Occupational title	Base Year employment, 2002	Projected employment change from base year (2002) to target year (2012)	Percent projected employment change from base year 2002
Health Care and Social Assistance	620000	29-0000	Healthcare Practitioners and Technical Occupations	3010	3480	470
Plastics and Rubber Products Manufacturing	326000	51-0000	Production Occupations	1980	2340	360
Chemical Manufacturing	325000	51-0000	Production Occupations	830	1000	170
Chemical Manufacturing	325000	19-2031	Chemists	30	40	10
Chemical Manufacturing	325000	19-2000	Physical Scientist	40	50	10
Chemical Manufacturing	325000	19-1000	Life Scientists	20	20	10
Chemical Manufacturing	325000	19-1022	Microbiologists	20	20	10
Chemical Manufacturing	325000	19-4021	Biological Technicians	50	60	10
Chemical Manufacturing	325000	19-4031	Chemical Technicians	50	60	10

Occupation ID 51-0000, Production Occupations in Plastics and Rubber Products Manufacturing project an increase of 360 new jobs. Several occupational titles in Chemical Engineering show an additional increase of 230 new jobs in chemical manufacturing distributed among chemists, physical scientists, life scientists, microbiologists, biological technicians and chemical technicians

Question 5: In which of our industries do we now have the greatest comparative advantage?

Table 7
Industries With the Greatest Comparative Advantage in EGR 7

Year	NAICS	Industry	Jobs LQ (IN base)	Jobs LQ (Midwest base)	Jobs LQ (US base)
2004	326	Plastics and Rubber Products Manufacturing	2.27	3.22	5.64
2004	336	Transportation Equipment Manufacturing	0.83	1.31	2.92
2004	493	Warehousing and Storage	1.68	2.12	2.71
2004	325	Chemical Manufacturing	1.59	2.26	2.69
2004	447	Gasoline Stations	1.7	2.12	2.2
2004	922	Justice, Public Order, and Safety Activities	5.8	3.73	2.09

Table 7 illustrates the comparative advantage of six industries in EGR 7 in comparison with Indiana, the Midwest, and the US. EGR 7 leads all comparisons of comparative advantage at all levels with the exception of Transportation Equipment Manufacturing, compared to the state of Indiana. Many of the comparisons show concentrations of at least double the average of all industries of those listed.

Question 6: Which Industries seem to be building a strong competitive advantage for the future?

The regional job shifts indicated in **Table 8** support the fact that several industries have a strong competitive advantage for the future. The strongest industry is Plastics and Rubber Products Manufacturing which is followed by Transportation Equipment Manufacturing and probably due to the continuing growth of Great Dane Trailers. Social Assistance and Machinery Manufacturing show signs that they are building a competitive advantage, but at a slower pace while others are headed in a positive direction.

Table 8

Industries With or Building a Strong Competitive Advantage for the Future

Year	NAICS	Industry	Jobs Change	Jobs National Growth	Jobs Industry Mix	Jobs Regional Shift
2004	326	Plastics and Rubber Products Manufacturing	1,692.00	195.61	-270.66	1,767.04
2004	336	Transportation Equipment Manufacturing	688	415.55	-712.13	984.58
2004	624	Social Assistance	915	135.78	256.3	522.92
2004	333	Machinery Manufacturing	362	51.63	-109.51	419.89
2004	331	Primary Metal Manufacturing	145	63.12	-162.69	244.58
2004	485	Transit and Ground Passenger Transportation	226	24.02	10.58	191.39
2004	561	Administrative and Support Services	1,112.00	328.86	634.02	149.12
2004	56	Administrative and Support and Waste Management and Remediation Services	1,122.00	361.38	627.23	133.39
2004	928	National Security and International Affairs	44	41.93	-114.43	116.5
2004	71	Arts, Entertainment, and Recreation	226	64.31	63.9	97.79
2004	447	Gasoline Stations	88	176.96	-179.71	90.75

Table 8 indicates that several industries in EGR 7 have a strong competitive advantage for the future with a large shift of jobs in the region.

Question 7: Which of our industries are positioned to capitalize on regional, national, and/or global growth trends?

Plastics and Rubber Products Manufacturing, Transportation and Equipment Manufacturing, and Chemical Manufacturing appear to be three major industries in EGR 7 that are positioned to capitalize on regional, national, and/or global growth trends. All have a comparative advantage with Location Quotients for the Midwest ranging from 1.31 to 3.22 and with the Nation at LQs of 2.69 to 5.64. In addition and Table 8 indicates that we have a significant competitive advantage in two of the above manufacturing areas. All currently serve world markets and opportunities for growth should follow. Several companies of the selected industries produce significant percentages of their products for national and world markets.

8. Which industries have been targeted by state and/or local economic development experts for future growth?

Life and Health Sciences, Logistics, Technology and Advanced Manufacturing are major areas endorsed and supported for future growth by Indiana and regional/local organizations. In a sense, even though they are different industries, they have common components such as similar skill requirements, high technology, skilled workers, and high wages. These two industries are among the largest in Indiana and EGR 7.

The Central Indiana Corporate Partnership (CICP) has been a major factor in the move to create business opportunities in central Indiana in a variety of areas. One of its accomplishments has been to establish the Life Sciences through the Central Indiana Life Sciences Initiative. Their definition of life sciences includes "pharmaceuticals, medical devices and instruments, hospitals and laboratories, food and nutrition, organic and agricultural chemicals and research and testing." These efforts have been endorsed by the state of Indiana, significant companies, and the state's higher education infrastructure.

The 2005 Region 6 Strategic Plan for Economic Development prepared by the Indiana Department of Commerce indicates that the chemicals cluster in EGR 7 employed more than 5,500 people in 2003 and is almost three times as concentrated as the nation. This strategic plan also indicates that "pharmaceuticals manufacturing," which is within the chemicals industry group, though highly concentrated, lost both concentration and employment during the 2001-2003." However, the pharmaceutical industry remains strong in Western Indiana and is showing signs of renewed growth in the near future.

At a local level in EGR 7, the Terre Haute Economic Development Corporation (THEDC) has endorsed a biotechnology initiative that includes the life sciences as a key element. In speaking to the Board of Directors of the THEDC in May of 2005, Dave Johnson, President and CEO of BioCrossroads, stated that "Indiana gained jobs in the life sciences at more than twice the rate of the nation from 2001-2003, rising 4.5 percent compared with the 2 percent national increase.

Advanced manufacturing also receives much support with the development of the Wabash Valley Advanced Manufacturing Cluster in west central Indiana.

Question 9. Who are the region's specific employers by six-digit NAICS Industry Code? How many workers do they employ? What are their annual sales? Where are they located? Who is an appropriate person to contact at that firm?

Critical Occupations and Skill Sets Analysis

EGR 7 Employers

Health Care

EMPLOYER NAME	INDUSTRY	ADDRESS	CITY	SIZE	ANNUAL SALES In thousands
Sullivan Co Community Hospital	622110	2200 N Section St	Sullivan	100-249	10,000-19,999
T.H. Regional Hospital	622110	3901 S 7th	Terre Haute	500-999	50,000-99,999
Union Hospital	622110	1606 N 7th	Terre Haute	1,000-4,999	100,000-499,999
West Central Community Hospital	622110	801 S Main	Clinton	250-499	20,000-49,999
St Vincent Clay	622110	1206 E National	Brazil	250-499	10,000-19,999
Putnam Co Hospital	622110	1542 S Bloomington	Greencastle	250-499	20,000-49,999
Hux Cancer Center	621111	1606 N 7th	Terre Haute	20-49	5,000-2,499
Indiana MRI	621512	4313 S 7th	Terre Haute	20-49	5,000-9,999
Providence Medical Center	621493	2723 S 7th	Terre Haute	20-49	5,000-9,999
Putnam Family Health Care	621111	309 Medic Way	Greencastle	10-19	5,000-9,999
Quarter Rad	621111	3102 Wabash	Terre Haute	1-4	1-499
Sullivan Family Practice	621111	2229 Mary Sherman Dr	Sullivan	20-49	5,000-9,999
T H Heart Center	621111	455 Hospital Lane	Terre Haute	20-49	5,000-9,999
T H Med Lab	621511	1606 n 7th	Terre Haute	20-49	2,500-4,999
T H Pulmonary Pediatric	621111	4525 S Springhill	Terre Haute	20-49	5,000-9,999

Wabash Valley Surgery Center	621493	422 Poplar	Terre Haute	20-49	5,000-9,999
Healthsouth Rehab Ctr	622110	501 E St. Anothony Dr	Terre Haute	100-249	10,000-19,999
AP&S Clinic	621111	221 S 6th St	Terre Haute	250-499	20,000-49,999
Ambucare Clinic	621111	3387 S US Hwy 41	Terre Haute	20-49	5,000-9,999

Manufacturing

EMPLOYER NAME	INDUSTRY NAICS	ADDRESS	CITY	SIZE	ANNUAL SALES In thousands
AET Films	326199	3600 E Head Ave	Terre Haute	500-999	100,000-499,999
Futurex	326212	107 Smith St	Bloomingdale	100-249	20,000-49,999
Heartland Automotive	326199	300 S Warren Dr	Greencastle	500-999	50,000-99,999
Jadcore	326199	300 N Fruitridge	Terre Haute	100-249	20,000-49,999
North American Latex	326299	49 Industrial Park Dr	Sullivan	50-99	10,000-19,999
Tredegar Film	326113	3400 Ft Harrison	Terre Haute	50-99	10,000-19,999
Bemis Polyethlene Packaging	322223	1350 N Fruitridge	Terre Haute	1,000-4,999	100,000-499,999
International Paper	322121	2401 Prairieton Rd	Terre Haute	100-249	50,000-99,999
Wabash Valley Packaging	322211	1303 Industrial Dr	Terre Haute	10-19	2,500-4,999
Hulman & Co	311999	900 Wabash	Terre Haute	100-249	20,000-49,999
IndyBake Products	311412	9445 E US Hwy 40	Terre Haute	100-249	50,000-99,999
Grower's Co-op	311119	2600 S 13th	Terre Haute	50-99	50,000-99,999
Poly One Corp	325211	3100 N 35th	Terre Haute	100-249	100,000-499,999
Novelis	331316	5901 N 13th	Terre Haute	100-249	50,000-99,999

CSN	331111	455 W Industrial Dr	Terre Haute	100-249	50,000-99,999
Shenango Industries	331513	1200 College Ave	Terre Haute	50-99	2,500-4,999
Britt Tool	333514	949 E National Ave	Brazil	50-99	5,000-9,999
Sony DADC	334419	1800 N Fruitridge	Terre Haute	500-999	
Smiths Aerospace	336412	333 S 3rd	Terre Haute	250-499	
Allomatic Products	336399	609 E Chaney	Sullivan	20-49	10,000-19,999
GE Tri-Remanufacturing	336413	3390 Locust	Terre Haute	100-249	20,000-49,999
Lear Corp	336399	500 N Fillmore Rd	Greencastle	500-999	100,000-499,999
Scott Pet Products	311111	1543 N US Hwy 41	Rockville	100-249	
Ampacet Corp	424950	3701 N Fruitridge	Terre Haute	100-249	5,000-9,999
Aisin Brake & Chassis	811118	10550 James Adams St	Terre Haute	100-249	10,000-19,999
Great Dane Trailers	336212	2664 E US Hwy 40	Brazil	500-999	100,000-499,999

Bio-Tech Manufacturing

EMPLOYER NAME	INDUSTRY NAICS	ADDRESS	CITY	SIZE	ANNUAL SALES In thousands
Danisco	325199	PO Box 8266	Terre Haute		
Eli Lilly	424210	10500 N SR 63	Clinton	500-999	1,000,000 +
Pfizer	325412	100 Pfizer Dr	Terre Haute	250-499	100,000-499,999

Health Care Industry

Health Care Industry

Health care and related services were the largest industry in the nation in 2002. Nation wide 16% of all new jobs between 2002 and 2012 will be in the health care industry. Health care occupations represent 10 of the top 20 fastest growing jobs.[1]

In the November 2002 "Clusters, Competitiveness, and Economic Development in Western Indiana" prepared by Regional Technology Strategies of Carrboro, North Carolina for the Western Indiana Workforce Investment Board, health care was identified as an emerging strategic cluster, despite an employment Location Quotient (LQ) of 0.81 and an establishment LQ of 0.59. Strategic clusters are those that have insufficient mass to be a competitive cluster but are vitally important to the future of the region either because of their potential for job creation, their value to another cluster or their potential for certain under-served populations. Certainly, health care is vitally important to a region as an employer because of the continued demand for both highly-skilled, semi-skilled and entry level workers and the services they provide to other area employers. Current information reports an establishment LQ of 1.24 and jobs LQ of 1.03, and while these numbers are not statistically significant by themselves, they do indicate the sector is continuing to grow.[2]

The health care industry as a whole is one of the top three employers in Sullivan, Vermillion and Vigo Counties. In EGR 7 the number of jobs in health care and social services grew by 9.2% between 2001 and 2004, and in 2004 represented 12.5% of the jobs (10,692), with the largest number of employees and the highest wages in the ambulatory health care services and hospital sectors.[3] At the national, state and local levels health care has been the focus of a great deal of attention in the past few years. Shortages, both current and future, have been identified in many health care careers while it is anticipated that the demand for health care services will continue to grow. Much of the shortage and the demand can be traced to the aging "baby boom" generation. Based on US Census 2000 data, 38% of the region's population is 45 or older. By the year 2012, 20,388 will be eligible for retirement, while only 15,070 young adults will be entering the workforce.

Identifying critical occupations in the health care field is akin to the age-old question of which came first, the chicken or the egg? No single health care occupation exists in isolation; interdependency is woven throughout the system. A nurse or technician cannot carry out an order without a doctor to give the order, the pharmacist to provide the medication, the nutrition department to provide the appropriate diet, access to the proper medical records, housekeeping staff to ensure sanitary conditions, and myriad of other functions within the health care setting. The table in Figure 1 indicates the number of employees in selected health care fields in 2002 and the projected opening in 2012.

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1 www.bls.gov

2. http://www.stats.indiana.edu/ssi/cew_ann/index.html?REGR_7
3.http://www.stats.indiana.edu/ssi/cew/index.htms?REGR_7

While these numbers do not measure criticality of an occupation, they do provide a measure of where growth can be anticipated.

TITLE	EMPLOYED 2002	PROJECTED 2012	REPLACEMENT OPENINGS	NEW OPENINGS	TOTAL OPENINGS
Family & General Practitioners	60	110	10	50	60
Registered Nurses	1410	1540	300	130	430
Physical Therapists	80	90	10	10	20
Respiratory Therapists	80	100	30	20	50
Radiological Technicians	140	220	30	80	110
EMTs & Paramedics	200	250	20	50	70
Respiratory Therapy Technicians	30	40	0	10	10
Licensed Practical & Vocational Nurses	550	580	120	40	160
Medical Records Technicians	90	110	10	20	30
Home Health Aides	1320	1430	170	110	280
Nurses Aides & Orderlies	1120	1220	150	100	250
Medical Assistants	230	360	40	130	170

Figure 1: Projected growth, both new and replacement in selected health care occupations in EGR 7. Source: www.stats.indiana.edu/ssi/occupations/egr7projections.xls

As shown in Figure 1, considerable growth is anticipated in the number of home health aides, nurses aides and orderlies and medical assistants. However, these are low skill and low pay occupations that do not meet the parameters of this grant request. Generally it is not considered difficult to fill these positions, but turnover is often cited as a concern. These entry-level occupations could be considered as a career ladder starting point for some of the more highly skilled, high wage jobs in the health care field.

The projected need for Family and General Practitioners is fairly significant. Area health care professionals indicated there is probably little that can be done on a local basis to increase the number of individuals entering this field, other than encouraging the study of science and math.

The need for EMTs and Paramedics appears significant when based on numbers only. Locally, most ambulance and emergency services are provided through the local fire departments where there is a readily available supply of individuals to fill openings as they occur.

Although the demand for registered nurses and licensed practical and vocational nurses is great and many positions will be available through 2012, the results of local interviews and focus groups indicate little difficulty filling these positions locally. Both Indiana State University and Ivy Tech Community College have nursing degree programs that are filled to capacity, and have the ability to produce graduates equal to the local demand. Indiana State University produced 350 School of Nursing graduates from 1993 through 2000. The average number of students enrolled each year in the School of Nursing at ISU in 2000 through 2002 was 508.[2] Ivy Tech Community College has graduated 256 Licensed Practical Nurses since the 2001-02 school year.[3] Assuming the enrollment and graduation rates remain fairly consistent, these numbers will continue to meet the projected local need through 2012.

Local employees have indicated that the critical positions that are the most difficult to fill are those of physical therapists, radiologic technician and respiratory therapists and technicians. These occupations all require advanced training and certification. A two year associate degree plus on the job training are required for all but physical therapy, which requires a minimum of a bachelor's degree.

The general knowledge requirements, as reported by the Occupational Information Network (O*NET) for each occupation are shown in Figure 2.

	Physical Therapy	PT Assistant	Respiratory Tech	Radiology Tech
Customer & Personal Service	X	X	X	X
Medicine & Dentistry	X	X	X	X
Physics			X	X
Psychology	X	X	X	X
English Language	X	X	X	X
Computers & Electronics				X

[2] Office of Strategic Planning, Institutional Research and Effectiveness, Indiana State University
[3] Office of Admissions, Ivy Tech Community College- Wabash Valley

Mathematics			X	X
Therapy & Counseling	X	X		
Education & Training	X	X	X	
Biology	X		X	
Public Safety & Security		X	X	
Chemistry			X	
Sociology & Anthropology	X			

Figure 2: General Knowledge Requirements for Selected Health Care Careers

Source: http://online.onetcenter.org

Each of the selected occupations, as supported by the Work Keys profiles, requires the employee to be able to locate, understand, record and disseminate general medical knowledge in order to communicate effectively with a wide variety of individuals. Although it is not reflected in Figure 2, based on interviews with local providers, all occupations would require the ability to use a computer and a variety of electronic equipment in the workplace. Knowledge of biology is also noted, and can be considered of great importance in health care and the entire life science/biotech field.

Occupational Shortages Analysis

Region 7 growth predictions for Radiologic Technicians and the combined fields of Respiratory Therapists and Respiratory Technicians show these areas are growing faster than the state. From 2002 through 2012 there is 54% increase projected for the number Radiologic Technicians needed in Western Indiana. [4] The Indiana Workforce Development Agency projected 80 new jobs and 30 replacement openings during this time frame. The field of Respiratory Therapy will see a 19% increase for Therapists and 22.5% increase for Technicians.[5] This represents an estimated 30 new jobs and 30 replacements for both fields. Many facilities have one or the other, but not always both, so for the purpose of this report the totals have been combined. In a 2003 report prepared for the Indiana Health Industry Forum it was indicated that statewide there would be 9.4% growth in the number of Radiologic Tech positions and 20.5% growth in the number of Respiratory Therapy position from 2003 to 2008.[6]

Local service providers indicated that there is a serious shortage of qualified physical therapists. However, the number of projected openings is quite small, only ten new opening through 2012. This and the fact that Physical Therapy requires at a minimum, a four-year degree does not make it a strong occupation for consideration as part of this initiative.

The demand for health care services continues to grow as our population ages. When you add other risk factors that contribute to the need for medical services such as, the Center for Tobacco Cessation report in July of 2005 that 26.1% of Indiana adult residents 31.6% of youth (grades 9-12) smoke and 58.7% of the adults in Indiana are overweight or obese, it is easy to see why the demand for health care is so great.

Competition for qualified therapists in both fields is increasing. As outpatient services are being made available in free standing clinics and residential health care facilities employ full time therapy staff, hospitals are no longer the main place of employment for respiratory and radiology professionals. The pool of applicants is also directly affected by the availability of training and certification sites. Vincennes University discontinued its respiratory care program a few years ago, resulting in a lack of trained respiratory care professionals. Ivy Tech Community College, Wabash Valley, began enrolling students in respiratory care in the fall of 2004, but graduates will not be available until fall of 2006.

It is mandatory that respiratory and radiology therapists and technicians be trained and certified. There is no substitute for a trained health care professional. Even if a professional from another field assists in an emergency, that does not alleviate the problem, it only pushes it a little further down the line.

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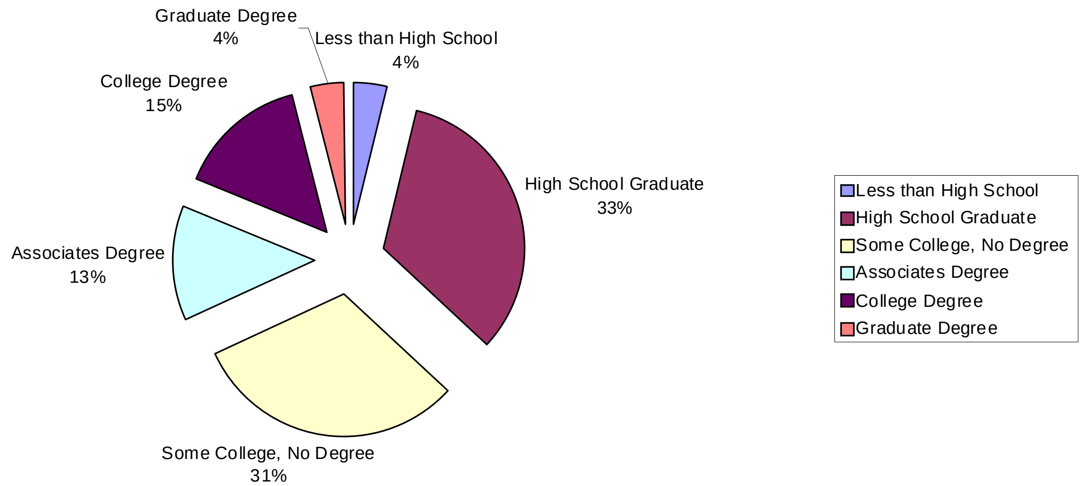
[4] http://www.stats.indiana.edu/ssi/occupations/egr7projections.xls
[5] http://www.stats.indiana.edu/ssi/occupations/egr7projections.xls
[6] Miller, Thomas P. and Associates and Hudson Institute; “Demand for Workers in Indiana’s Health Industries” July 2003, page 42.

The number of Respiratory Care Licenses issued in Indiana declined 28.5% from 1998 through 2002. In 2002 only 128 new licenses were issued, and only 4 of those were issued in EGR 7. It has been estimated that from 2003 to 2008 there will be 560 Respiratory Therapist degrees or certificates awarded throughout the state to fill the estimated 844 positions available. 720 Radiologic Technicians degrees will be issued during the same time frame to fill the 757 openings. It is important to remember that not everyone receiving a degree will be working or working in Indiana, further increasing the size of the gap. [7]

The 2004 study by the Pathfinders reported that 29,900 workers in EGR 7 consider themselves to underemployed, i.e.; they earn less than they should or work in a job for which their education, experience or skills make them overqualified. Another 13,300 were unemployed at the time of the survey and actively seeking work. These individuals, with additional training, may have the potential to fill the gaps in the healthcare industry. 50% of these workers reported they would be willing to change jobs for $14.75 per hour or less. The reported education level, shown in Figure 3, as 63% report having greater than a high school education.[8]

[7] Miller, page 11.
[8] The Pathfinders; "West Central Indiana Area Workforce Report", June 2004.

Education Levels of Underemployed



In the fall of 2004 and 2005, over 900 area high school students completed Work Keys testing in the areas of Applied Math, Reading for Information, and Locating Information. The number of students (by gender) scoring at a level 4 or greater is shown below.

	Reading for Information	Applied Math	Locating Information
Females	71%	58%	58%
Males	82%	86%	70%

If you compare this to the required Work Keys scores for these health care occupations, most high school students already meet or exceed the standard, thus providing a pool of future workers.

Title/O*NET Number/Career Cluster/Career Area	AM	AT	L	LI	OB	RI	TW	W
Respiratory Therapist 29-1126.00 I R Range	6 6-6		4 4-5	6 6-6	5 4-6	5 5-5	4 4-4	3 3-3
Radiologic Technologists 29-2034.01 I Q Range	3 3-4	3 3-3	3 2-4	4 3-5	4 3-6	5 4-5	3 3-5	3 3-3

Radiologists in EGR 7 on average earn $18.62 per hour ($38,740 annual). This is slightly less than the state average of $19.78 per hour. Nationally, half of all people in this occupation earn between $36,170 and $52,430 annually. The local average annual wage for Respiratory Therapists is $42,279 and the national average wage is $42,930. The wages have continued to trend upward at all levels over the last 4 to 5 years. It is anticipated this trend will continue as long as the demand remains high. Both of these careers certainly offer the employee an opportunity to become self-sufficient. Nearly all of the full time positions available locally provide excellent benefit packages. And, since they require a two-year degree as opposed to a four-year degree, they are more affordable and more likely to appeal to young adults and incumbent or unemployed workers seeking a secure future.

Local employers have placed an emphasis on "home-grown" professionals. Young professionals not from the Indiana or the Midwest, or with no ties to the region, tend to move on to more urban areas. Individuals with families are more content to live in this area. Therefore, area students and local underemployed people should make excellent candidates for these health care careers.

Interviews with five of the area hospitals, indicated that it generally takes at least three months to fill Respiratory or Radiology tech positions. It was also discovered that area nursing homes currently are "stealing" employees and candidates, by offering higher wages. Three of eight area nursing homes indicated that they contract respiratory and radiology services through local hospitals. Two others have therapists on staff.

Area providers are actively seeking ways to increase the number of health care workers in the "pipeline". They are looking for creative solutions to a problem that will greatly effect their ability to provide premier health care to the residents of the region in the future.

Demand Side Worksheet

EGR Name:	EGR7
Occupation Name:	Respiratory Therapist
Occupation SOC:	29-1126

1. Estimated Job vacancies, end of 2005

Lower estimate	7
Middle estimate	10
Upper estimate	13

2. Projected number of job openings annually due to growth and net replacements:

Year	2006	2007	2008	2009	2010	2011	2012
A. Lower projection:							
Total, all industries in EGR	7	7	7	7	7	7	7
622 Hospitals	4	4	4	4	4	4	4
623 Nursing and Residential Care Facilities	3	3	3	3	3	3	3
B. Middle projection:							
Total, all industries in EGR	10	10	10	10	10	10	10
622 Hospitals	6	6	6	6	6	6	6
623 Nursing and Residential Care Facilities	4	4	4	4	4	4	4
C. Upper projection:							
Total, all industries in EGR	13	13	13	13	13	13	13
622 Hospitals	8	8	8	8	8	8	8
623 Nursing and Residential Care Facilities	5	5	5	5	5	5	5

Notes:

This worksheet allows for "ranges" of estimates and projections in recognition of the fact that these values cannot be known with certainty. The meanings of the words "Lower," "Middle," and "Upper" are as follows:

A. "Lower" means that your EGR thinks the probablity is no more than 25% that the true value lies below it.

B. "Middle" means that your EGR thinks the probability is about equal that the true value lies either below it or above it.

C. "Upper" means that your EGR thinks the probablity is no more than 25% that the true value lies above it.

Supply Side Worksheet #1 ("Production")

EGR Name:	EGR7
Occupation Name:	Respiratory Therapist
Occupation SOC:	29-1126

Projected "production" of new entrants into this occupation, by year							
Year	2006	2007	2008	2009	2010	2011	2012
a. Graduates/completers of education and training programs in this EGR:							
Ivy Tech	8	14	15	15	15	15	15
b. Other sources of entrants (other than in-migration)							
c. Total new supply	8	14	15	15	15	15	15

Supply Side Worksheet #2 ("Migration")

EGR Name:	EGR7
Occupation Name:	Respiratory Therapist
Occupation SOC:	29-1126

Year	2006	2007	2008	2009	2010	2011	2012
1. Projected IN-migration of workers in this occupation to this EGR, by year							
a. From outside this EGR	0	0	0	0	0	0	0
b. From other occupations	0	0	0	0	0	0	0
2. Projected OUT-migration of workers in this occupation to this EGR, by year							
a. To places outside this EGR	2	3	4	4	4	4	4
b. Into other occupations	0	0	0	0	0	0	0
3. Net IN-Migration	-2	-3	-4	-4	-4	-4	-4

Worksheet for Calculating Shortages or Surpluses of One Occupation

EGR Name:	EGR7
Occupation Name:	Respiratory Therapist
Occupation SOC:	29-1126

A. Lower projection:

Total, all industries in EGR								
Year	2005	2006	2007	2008	2009	2010	2011	2012
Carryover from last year (+/-)		7	8	4	0	-4	-8	-12
New demand during year		7	7	7	7	7	7	7
New production during year		8	14	15	15	15	15	15
Net migration during year		-2	-3	-4	-4	-4	-4	-4
Net change during year		1	-4	-4	-4	-4	-4	-4
Carryover to next year (+/-)	7	8	4	0	-4	-8	-12	-16

B. Middle projection:

Total, all industries in EGR								
Year	2005	2006	2007	2008	2009	2010	2011	2012
Carryover from last year (+/-)		10	14	13	12	11	10	9
New demand during year		10	10	10	10	10	10	10
New production during year		8	14	15	15	15	15	15
Net migration during year		-2	-3	-4	-4	-4	-4	-4
Net change during year		4	-1	-1	-1	-1	-1	-1
Carryover to next year (+/-)	10	14	13	12	11	10	9	8

C. Upper projection:

Total, all industries in EGR								
Year	2005	2006	2007	2008	2009	2010	2011	2012
Carryover from last year (+/-)		13	20	22	24	26	28	30
New demand during year		13	13	13	13	13	13	13
New production during year		8	14	15	15	15	15	15
Net migration during year		-2	-3	-4	-4	-4	-4	-4
Net change during year		7	2	2	2	2	2	2
Carryover to next year (+/-)	13	20	22	24	26	28	30	32

Notes:

(1) A positive (+) carryover indicates a "shortage" of workers in this occupation. A negative (-) carryover indicates the opposite.

(2) This worksheet allows for "ranges" of estimates and projections in recognition of the fact that these values cannot be known with certainty. The meanings of the words "Lower," "Middle," and "Upper" are as follows:

A. "Lower" means that your EGR thinks the probablity is no more than 25% that the true value lies below it.

B. "Middle" means that your EGR thinks the probability is about equal that the true value lies either below it or above it.

C. "Upper" means that your EGR thinks the probablity is no more than 25% that the true value lies above it.

Demand Side Worksheet

EGR Name:	EGR7
Occupation Name:	Radiological Technologists and Technicians
Occupation SOC:	29-2034

1. Estimated Job vacancies, end of 2005

Lower estimate	10
Middle estimate	12
Upper estimate	13

2. Projected number of job openings annually due to growth and net replacements:

Year	2006	2007	2008	2009	2010	2011	2012
A. Lower projection:							
Total, all industries in EGR	10	10	10	10	10	10	10
621 Ambulatory Health Care Services	3	3	3	3	3	3	3
622 Hospital	7	7	7	7	7	7	7
B. Middle projection:							
Total, all industries in EGR	12	12	12	12	12	12	12
621 Ambulatory Health Care Services	4	4	4	4	4	4	4
622 Hospital	8	8	8	8	8	8	8
C. Upper projection:							
Total, all industries in EGR	13	13	13	13	13	13	13
621 Ambulatory Health Care Services	5	5	5	5	5	5	5
622 Hospital	8	8	8	8	8	8	8

Notes:

This worksheet allows for "ranges" of estimates and projections in recognition of the fact that these values cannot be known with certainty. The meanings of the words "Lower," "Middle," and "Upper" are as follows:

A. "Lower" means that your EGR thinks the probablity is no more than 25% that the true value lies below it.

B. "Middle" means that your EGR thinks the probability is about equal that the true value lies either below it or above it.

C. "Upper" means that your EGR thinks the probablity is no more than 25% that the true value lies above it.

Supply Side Worksheet #1 ("Production")

EGR Name:	EGR7
Occupation Name:	Radioligical Technologists and Technicians
Occupation SOC:	29-2034

Projected "production" of new entrants into this occupation, by year

Year	2006	2007	2008	2009	2010	2011	2012
a. Graduates/completers of education and training programs in this EGR:							
Ivy Tech	30	30	30	30	30	30	30
b. Other sources of entrants (other than in-migration)							
c. Total new supply	30	30	30	30	30	30	30

Supply Side Worksheet #2 ("Migration")

EGR Name:	EGR7
Occupation Name:	Radiological Technologists and Technicians
Occupation SOC:	29-2034

Year	2006	2007	2008	2009	2010	2011	2012
1. Projected IN-migration of workers in this occupation to this EGR, by year							
a. From outside this EGR	0	0	0	0	0	0	0
b. From other occupations	0	0	0	0	0	0	0
2. Projected OUT-migration of workers in this occupation to this EGR, by year							
a. To places outside this EGR	20	20	20	20	20	20	20
b. Into other occupations							
3. Net IN-Migration	-20	-20	-20	-20	-20	-20	-20

Worksheet for Calculating Shortages or Surpluses of One Occupation

EGR Name:	EGR7
Occupation Name:	Radiological Technologists and Technicians
Occupation SOC:	29-2034

A. Lower projection:

Total, all industries in EGR								
Year	2005	2006	2007	2008	2009	2010	2011	2012
Carryover from last year (+/-)		10	10	10	10	10	10	10
New demand during year		10	10	10	10	10	10	10
New production during year		30	30	30	30	30	30	30
Net migration during year		-20	-20	-20	-20	-20	-20	-20
Net change during year		0	0	0	0	0	0	0
Carryover to next year (+/-)	10	10	10	10	10	10	10	10

B. Middle projection:

Total, all industries in EGR								
Year	2005	2006	2007	2008	2009	2010	2011	2012
Carryover from last year (+/-)		12	14	16	18	20	22	24
New demand during year		12	12	12	12	12	12	12
New production during year		30	30	30	30	30	30	30
Net migration during year		-20	-20	-20	-20	-20	-20	-20
Net change during year		2	2	2	2	2	2	2
Carryover to next year (+/-)	12	14	16	18	20	22	24	26

C. Upper projection:

Total, all industries in EGR								
Year	2005	2006	2007	2008	2009	2010	2011	2012
Carryover from last year (+/-)		13	16	19	22	25	28	31
New demand during year		13	13	13	13	13	13	13
New production during year		30	30	30	30	30	30	30
Net migration during year		-20	-20	-20	-20	-20	-20	-20
Net change during year		3	3	3	3	3	3	3
Carryover to next year (+/-)	13	16	19	22	25	28	31	34

Notes:

(1) A positive (+) carryover indicates a "shortage" of workers in this occupation. A negative (-) carryover indicates the opposite.

(2) This worksheet allows for "ranges" of estimates and projections in recognition of the fact that these values cannot be known with certainty. The meanings of the words "Lower," "Middle," and "Upper" are as follows:

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B. "Middle" means that your EGR thinks the probability is about equal that the true value lies either below it or above it.

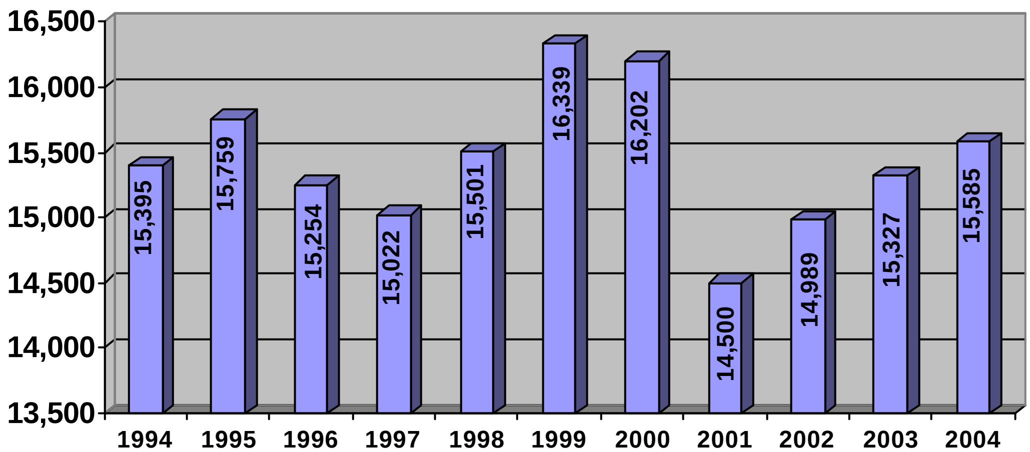
C. "Upper" means that your EGR thinks the probablity is no more than 25% that the true value lies above it.

Manufacturing Industry

THE MANUFACTURING SECTOR

Manufacturing is a cornerstone of the ERG Region 7 economy. For more than a decade, the manufacturing sector has provided the largest number of jobs to the region and paid the greatest average annual wage rates[9]. There has been little fluctuation in the number of manufacturing jobs in the region. Employment in Western Indiana's manufacturing increased by 5.4 percent between 1990 and 2000, compared to a national manufacturing employment growth level of 3.6 percent over the same period. While exceeding the national growth rate, manufacturing's share of private sector employment did decline slightly in the region from 27 percent to 25 percent. The manufacturing sectors that led the way during the period in terms of absolute job growth include: transportation equipment, rubber and plastics, electronic equipment, fabricated metal products, and industrial machinery.[10] The largest greatest decline in the number of manufacturing job in the region occurred in 2001, however, the job rate has steady increased since that time. (See Table1)

ERG Region 7
Number of Jobs in the Manufacturing Sector
Over the Past Decade



Source: Stats Indiana

In 2002 (the latest year such data is available), the manufacturers in Clay, Parke, Putnam, and Vigo counties[11] generated $3,658,973,000 in sales, shipments, receipts, or revenue;

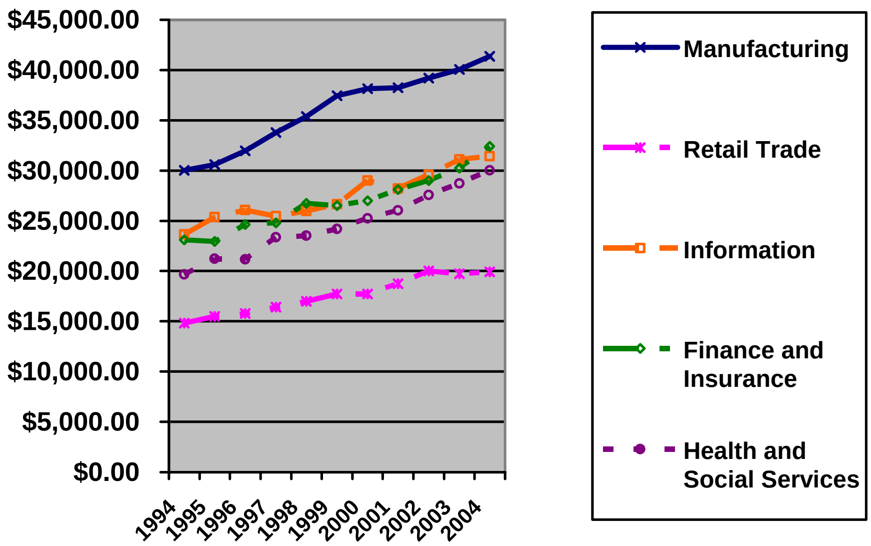
[9] Source: Stats Indiana
[10] Source: Regional Technologies Strategies
[11] Not such data available for Sullivan and Vermillion counties.

an annual amount larger than any other industry sector, including retail, which totaled $2,874,611,000 for the same year. [12] While this revue alone is a critical boost to local economies, complete appreciation of manufacturing's contribution to the state and regional economy is through an understanding of its multiplier effect. For every dollar of a manufacturing product sold to a final user, an additional $1.26 of intermediate economic output is generated. Manufacturer's multiplier effect is greater than the general multiplier effect of 98 cents for all other industries and far greater than that of the service sector, which generates only 74 cents of intermediate activity per $1.00 of final sales[13].

In addition to the economic wealth generated by manufacturing through sales, shipments, receipts, or revenues, is the influx of payroll revue to area communities. In 2004, wages paid by manufacturers to employees in EGR 7 totaled $633,684,156.00[14]. While a surprise to many, the average annual wage paid by manufactures in the region is consistently greater than that of any other sector of the region. (See Figure 2) In addition, the majority of jobs in manufacturing provide health-care coverage. For example, 83.7 percent of manufacturing workers received direct health-care coverage through their employers in 2001;[15] a rate second only to workers employed in the government sector.

ERG 7

Average Annual Wage Comparison*

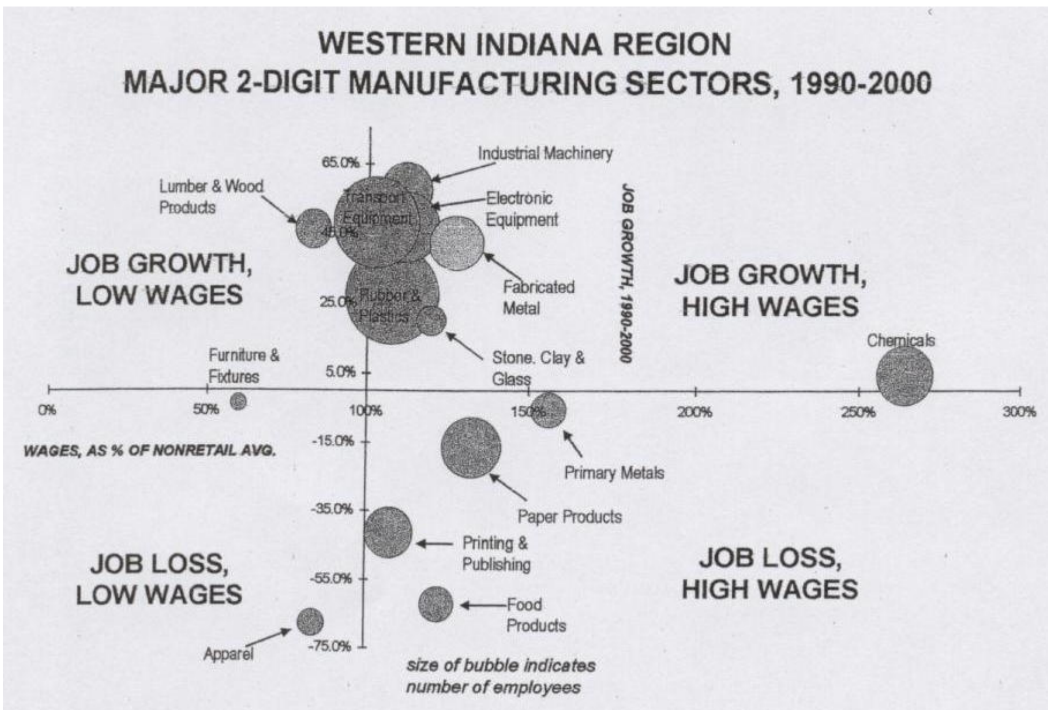


*Source: Stats Indiana

Based on the quantitative and qualitative analysis conducted for Western Indiana by Regional Technologies Strategies of North Carolina, existing manufacturing clusters within the region include motor vehicle manufacturing, metalworking and industrial machinery, plastics and chemicals, and primary nonferrous metals. The diagram shown

12 Source: US Census Bureau, 2002 Economic Census
13 Source: National Association of Manufacturers, The Manufacturing Institute, Deloitte & Touche
14 Source: Stats Indiana
15 Source: National Association of Manufacturers, The Manufacturing Institute, Deloitte & Touche

below is useful for visualizing the relative strength of the region's major manufacturing industries. For each two-digit manufacturing SIC manufacturing sector with more than fifty employees in 2000, the bubble chart plots three measures of performance: 1) employment growth from 1990 to 2000; 2) 2000 wage per worker as a percent of the non-retail average wage in the region (non-retail wage index); and 3) the number of employees in 2000 (indicated by the size of the bubble). The sectors in the upper right quadrant are high-performing based on the first two criteria and include: chemicals, industrial machinery, fabricated metal, electronic equipment, transportation equipment, and rubber and plastics. At the other extreme are the sectors in the lower left quadrant characterized by job loss and relatively lower wages. They include apparel, and furniture and fixtures. Sectors with relatively higher wages but declining employment between 1990 and 2000 are primary metals, paper products, printing and publishing, and food products.



In 2004, manufacturers employed 15,585 employees in ERG 7. The three industry sectors that employed the greatest number employees in 2004 are transportation equipment manufacturing (3473), plastics and rubber products (3003), and chemical manufacturing (1574). The number of establishments and jobs are highly concentrated in the region relative to the national as evidenced by the high regional location quotient of the following:

	Jobs LQ	Establishments LQ (US Base)[16]
Transportation Equipment Manufacturing:	2.92	1.72

[16] Source: Indiana Business Research Center, based on U.S. Bureau of Labor Statistics

Plastics and Rubber Products Manufacturing:	5.64	2.14
Chemical Manufacturing	2.69	1.60

Contrary to public perception, assembly-line jobs are only a relatively small - and declining – part of modern manufacturing. Manufacturing is becoming more knowledge intensive. To remain strong and continue to thrive in a highly competitive environment, regional manufacturers must meet many challenges. High on that list is a need to attract and retain employees prepared for today's high skill, and in most cases, highly technical jobs.

Demand for skilled manufacturing employees is great and immediate; a fact which is reflected in the "Top Ten Hot Jobs in Region 7."[17] Nine of the ten occupations listed are positions related to manufacturing. The number one ranked occupation is production laborers, followed by welders and cutters, welders – production, production helpers, assemblers – factory work, and welding machine operators.

The table below indicates the regional number of employees in demand manufacturing occupations in 2002 and the projected openings in 2012[18].

TITLE	EMPLOYED 2002	PROJECTED 2012	REPLACEMENT OPENINGS	NEW OPENINGS	TOTAL OPENINGS
Team Assemblers	930	1,000	240	70	310
Packaging and Filling Machine Operators and Tenders	490	570	100	80	180
Helpers-Production Workers	720	760	200	40	240
Maintenance and Repair Workers, General	1180	1340	230	150	380
Supervisors of Installation, Maintenance, and Repair Workers	500	530	130	30	160
Electrical and Electronics Repairers, Commercial and Industrial Equipment	110	130	20	20	40
Maintenance Workers, Machinery	80	90	20	10	30

Primary data related to anticipated job openings in the manufacturing sector comes from the 2005 Wabash Valley Advanced Manufacturing Cluster (WVAMC)[19] survey and through information gathered through interviews and focus groups. Twenty-six

[17] Source: IDWD – using data collected as of 6/19/05
[18] Source: IDWD – Release date July 2005
[19] See Appendix for Further Information

employers from throughout the western Indiana region participated in the survey. It should be noted that while the number of employers represents only about ten percent of the manufacturing establishments, this group collectively employs about 7,000 people. Most were manufacturing firms, although the group also included three distribution centers.

In the survey, participants were asked to identify both the number of new hires and replacement hires they will need in 2006 and 2007. Projections for 2006 indicate that 528 replacement and 619 additional hires will be needed by participating businesses. In 2007, it was projected that 326 replacement and 216 additional hires will be needed. This makes the total number of replacement and additional hires projected by this group for 2006 and 2007 1,689. It should be noted however, that sentiment was expressed by participants that it is difficult to project beyond one year, so many people were somewhat conservative with their 2007 projections.

Of the 1,436 total "production" openings projected over the next two years, the greatest number of openings was for the production positions of "assembler" and "packaging assembler." The combined openings for these two entry-level positions were 931. The second highest need in manufacturing was for "engineering" positions. The group projected a need for 58 engineering and engineering-related workers. The third highest need expressed was for "maintenance" positions, with 49 openings projected over the next two years. Manufacturers have also commented throughout the WVAMC survey process that they consider the employment of maintenance personnel critical to the operation of their businesses.

After further analysis, it was determined that key occupations in demand for manufacturing in ERG 7, both now and through 2012, include 1) entry-level positions such as assemblers, operators, and production workers-helpers, 2) engineers, and 3) maintenance workers. While the demand is greatest for entry-level positions, the demand driven system of Western Indiana has already aggressively begun to address this need through the Skills 1 certification program. Skills1 is a customized training program designed and supported by members of the Wabash Valley Advanced Manufacturing Cluster. Ivy Tech Community College developed a certification based on the needs expressed by employers, and the Western Indiana Workforce Investment Board and the WorkOne partners assist with marketing and directing applicants to the program. The objective of the program is to assist the area's unemployed and underemployed in upgrading their skills levels so they will qualify for these good jobs.

After extensive discussions with area manufacturers and partners in education, it was further determined that while there is a need for engineers and engineering-related positions, these openings are being filled without difficulty and the expectation is that this will remain the case in the immediate future. The occupations which employers have expressed having the greatest difficulty filling are maintenance and maintenance related positions. Manufacturers stated that they have not found any acceptable substitutes for these workers, and often find themselves "stealing" qualified maintenance workers from other manufacturing businesses. Specific occupations which have been identified include; general maintenance, machine maintenance, electrical maintenance, and maintenance supervisors. Indiana Department of Workforce Development officials support this need through their projection of 610 total openings in these four occupations from 2002 – 2012 in the Western Indiana region.

Because the function of manufacturing is centered around machinery, employing qualified maintenance employees is critical to employers. Have a production line down due to a mechanical malfunction can literally cost a business tens of thousands of dollars. And as production becomes more efficient, the reliance on highly technical machines and equipment will increase, further intensifying the need for maintenance employees. The salary levels associated with the four critical demand occupations reflect the responsibility that comes with these jobs, and perhaps because the regional annual wage rate is higher than that of the state and nation in three occupational areas, the scarcity of individuals with these qualifications.

Maintenance Annual Median Wage Chart*

Occup. Code	Title	Region 7	State	National
49-9042.00	Main./General	31,075	31,400	30,100
49-9043.00	Main./Machinery	37,461	35,800	32,700
49-2094.00	Electrical/Electronics	45,802	38,400	41,700
49-1011.00	1st Line Supervisor	53,040	45,500	49,300

*Source: IDWD, O-Net

All of the identified high demand, high wage occupations require high skill levels. Below please find both the O-net skill definitions and the Work Keys skill levels related to these four positions.

I. O-Net Skill Sets Report

I. Occupation: 49-9042.00, Maintenance and Repair Workers, General

Definition: Performing work involving the skills of two or more maintenance or craft occupations to keep machines, mechanical equipment, or structures of an establishment in repair. Duties may involve insulating, machining, welding, pipe fitting, carpentry, boiler making, repairing electrical or mechanical equipment, installing, aligning, and balancing new equipment; and repairing buildings, floors, or stairs.

Sample of Reported Job Titles: Maintenance Technician, Maintenance Mechanic, Maintenance Supervisor, Maintenance Electrician, Maintenance Engineer, Process Technician, Equipment Engineering Technician, Building Maintenance Mechanic, Building Mechanic, Instrument and Controls Technician.

O-Net Related Occupational Skills: (in order of importance) Equipment maintenance, repairing, troubleshooting, active listening, installation, equipment selection, reading comprehension, critical thinking, operational monitoring, coordination, active learning, operation and control, judgment and decision making, learning strategies, monitoring, speaking, complex problem solving, instructing, quality control analysis, service orientation, social perceptiveness, systems, evaluation, time management, mathematics, writing, systems, analysis, technology design, operations analysis, management and material resources, persuasion, negotiation, management of personnel resources, science, management of financial resources, programming.

II. Occupation: 49-9043.00, Maintenance Workers, Machinery

Definition: Lubricate machinery, change parts, or perform other routine machinery maintenance.

Sample of Reported Job Titles: (None listed.)

O-Net Related Occupational Skills: Equipment maintenance, repairing, troubleshooting, equipment selection, installation, operation and control, operation monitoring, technology design, quality control analysis, reading comprehension.

III. Occupation: 49-2094.00, Electrical and Electronics Repairers, Commercial and Industrial Equipment

Definition: Repair, test, adjust, or install electronic equipment, such as industrial controls, transmitters, and antennas.

Sample of Reported Job Titles: Industrial electrician, electrician, instrument and electrical technician, control technician, electrical and instrument technician, instrument and control technician, electrical repairman, electronic mechanic, hydro maintenance technician, hydro-plant technician

O-Net Related Occupational Skills: Troubleshooting, repairing, reading comprehension, installation, active listening, operation monitoring, coordination, equipment maintenance, critical thinking, active listening.

IV. Occupation: 49-1011.00, First-Line Supervisors/Managers of Mechanics, Installers, and Repairers

Definition: Supervise and coordinate the activities of mechanics, installers, and repairers.

Sample of Reported Job Titles: Maintenance supervisor, maintenance foreman, production crew supervisor, maintenance manager, crew leader, maintenance planner, airport skilled maintenance supervisor, electrical and instrumentation supervisor, electrical supervisor, facilities manager.

O-Net Related Occupational Skills: Management of personal resources, reading comprehension, mechanical knowledge, active listening, equipment selection, installation, instructing, effective communication, time management, troubleshooting, critical thinking, equipment maintenance.

II. Work Keys Occupational Skill Levels for Select Maintenance Occupations

TABLE: AM = Applied Math, AT = Applied Technology, L = Listening, LI = Locating Information, OB = Observation, RI = Reading for Information, TW = Teamwork, W = Writing

Title	AM	AT	L	LI	OB	RI	TW	W
Maintenance and Repair Workers, General	4	4	3	4	4	4	4	2
Range	3-6	3-6	2-5	3-6	3-6	3-7	3-5	1-4
Maintenance Workers, Machinery	3	4	3	4	4	3	3	3
Range	3-5	3-4	2-4	3-5	4-5	3-5	3-4	2-4
Electrical and Electronics Repairs, Commercial and Industrial Equipment	5	5	4	5	5	5	4	4
Range	4-7	4-6	3-5	4-6	4-6	3-7	3-5	3-5
First-Line Supervisors/ Managers of Mechanics, Installers, and Repairers	6	5	4	5	5	5	4	3
Range	3-7	4-6	3-5	4-6	3-5	4-6	3-6	3-4

An analysis of skill requirements related to these maintenance positions indicate that there are several skills that are central to the successful performance of all four occupations. These skills include; an understanding of the mechanical instillation, operation, and repair of machinery, strong problem solving and analytical skills, applied math and reading comprehension, observations skills, communication skills – both written and oral, decision making skills, time management, active listening skills, and an understanding of applicable OSHA rules and state and federal regulations. Machinery maintenance workers have a greater concentration of study in the operation of machinery. Electrical maintenance workers possess a greater comprehension of the principals of electrical circuitry and operation. And, maintenance supervisors must have leadership ability, a keen understanding of personnel policies and procedures, and must be able to train and motivate subordinates.

In Indiana, individuals who now hold these positions have the following occupational training levels:

	HS or Less	Some College	Bachelors +

Maintenance/General	56.7%	34.8%	8.5%
Maintenance/Machinery	58.1%	33.7%	8.3%
Electrical /Electronics	31.5%	63.4%	5.1%
1st Line Supervisor	47.7%	40.2%	12.1%
Total, All Occupations	*42.4%*	*27.8%*	*29.8%*

Source: O-Net

The current and anticipated supply of individuals with the skill levels needed to meet the current and projected need in these four high wage, high skill occupations is woefully inadequate. It is not unusual for manufacturing employers to take four to six moths to find a qualified person to fill a maintenance position.

The population growth rate of EGR 7 between 1990 and 2000 was much below that of the state; 5.6% locally compared to 9.7%[20] for the state in general. And, while the population of state ages, so does that of Western Indiana. In 2003, people 65 and over composed 13.9% of the region's total population. By 2023, this same age group is projected to account for nearly 20% of the population. Therefore, it is imperative that we not only encourage today's workers to improve their existing skill sets, but ensure that our youth have a clear understanding of the employment opportunities before them, and skill sets necessary to meet the challenge of today's highly technical, knowledge-based workplace.

Because nearly twenty percent of the population of EGR 7 do not have a high school degree or GED, about one in five people are current unqualified to even fill out an application for any of these four jobs or apply for further skills training. High schools in the area have very good technical training programs. Classes include topics such as machine trades and welding, which are applicable to the maintenance field, but there is no curriculum in place designed specifically for this field. A great barrier to the development of these programs is the fact that schools do not have the budgets to provide up-to-date manufacturing machinery or tools. And, issues of liability make the placement of students in job shadowing and internships activities very difficult. At the post-secondary level, Ivy Tech Community College offers "Industrial Maintenance Specialty," which is 64 credit hours and is aimed at an individual who wishes to move straight into the field upon graduation. Ivy Tech also offers "Manufacturing/Industrial Technology," which is also 64 credit hours, but is aimed at students wanting to transfer to Indiana State University or another post-secondary institution upon graduation. Both of the maintenance programs have relatively low enrollments. It appears the current trend is toward the study of heating and air conditioning. The program that Ivy Tech maintenance graduates transfer into at ISU is "Industrial Supervision." This program currently has sixty students enrolled in it. Taking all of these factors into consideration,

[20] US Census Bureau; Indiana Research Center

the area has no where near the appropriate number of workers prepared to meet the demand for more than 600 maintenance employees that manufactures will require in the near future. One must also take into consideration that while the SSI Consortium and Executive Committee has chosen to focus on the overwhelming need within manufacturing for maintenance professionals, nearly every business and organization (including schools) are competing for these same highly skilled, highly paid individuals, thus increasing the demand two or three fold.

Demand Side Worksheet

EGR Name: EGR7
Occupation Name: Maintenance Repair Workers; General
Occupation SOC: 49-9042

1. Estimated Job vacancies, end of 2005

Lower estimate	30
Middle estimate	35
Upper estimate	40

2. Projected number of job openings annually due to growth and net replacements:

Year	2006	2007	2008	2009	2010	2011	2012
A. Lower projection:							
Total, all industries in EGR	30	30	30	30	30	30	30
310 Manufacturing	30	30	30	30	30	30	30
B. Middle projection:							
Total, all industries in EGR	35	35	35	35	35	35	35
310 Manufacturing	35	35	35	35	35	35	35
C. Upper projection:							
Total, all industries in EGR	40	40	40	40	40	40	40
326 Plastics and Rubber Products Manufacturing	11	11	11	11	11	11	11
336 Transporation Equipment Manufacturing	4	4	4	4	4	4	4
325 Chemical Manufacturing	3	3	3	3	3	3	3

Notes:

This worksheet allows for "ranges" of estimates and projections in recognition of the fact that these values cannot be known with certainty. The meanings of the words "Lower," "Middle," and "Upper" are as follows:

A. "Lower" means that your EGR thinks the probablity is no more than 25% that the true value lies below it.

B. "Middle" means that your EGR thinks the probability is about equal that the true value lies either below it or above it.

C. "Upper" means that your EGR thinks the probablity is no more than 25% that the true value lies above it.

Notes: Upper projection represents state and national data calibrated to EGR7. Lower and middle projections were based on aggregate date provided by local industry. Because of confidentiality, manufacturing as an aggregate industry was used.

Supply Side Worksheet #1 ("Production")

EGR Name:	EGR7						
Occupation Name:	Maintenance Repair Workers; General						
Occupation SOC:	49-9042						
Projected "production" of new entrants into this occupation, by year							
Year	2006	2007	2008	2009	2010	2011	2012
a. Graduates/completers of education and training programs in this EGR:							
Ivy Tech	22	22	22	22	22	22	22
b. Other sources of entrants (other than in-migration)							
n/a							
n/a							
c. Total new supply	22	22	22	22	22	22	22

Supply Side Worksheet #2 ("Migration")

EGR Name:	EGR7						
Occupation Name:	Maintenance Repair Workers; General						
Occupation SOC:	49-9042						
Year	2006	2007	2008	2009	2010	2011	2012
1. Projected IN-migration of workers in this occupation to this EGR, by year							
a. From outside this EGR	0	0	0	0	0	0	0
b. From other occupations	0	0	0	0	0	0	0
2. Projected OUT-migration of workers in this occupation to this EGR, by year							
a. To places outside this EGR	4	4	4	4	4	4	4
b. Into other occupations	5	5	5	5	5	5	5
3. Net IN-Migration	-9	-9	-9	-9	-9	-9	-9

Worksheet for Calculating Shortages or Surpluses of One Occupation

EGR Name: EGR7
Occupation Name: Maintenance Repairer Workers; General
Occupation SOC: 49-9042

A. Lower projection:

Total, all industries in EGR								
Year	2005	2006	2007	2008	2009	2010	2011	2012
Carryover from last year (+/-)		30	47	64	81	98	115	132
New demand during year		30	30	30	30	30	30	30
New production during year		22	22	22	22	22	22	22
Net migration during year		-9	-9	-9	-9	-9	-9	-9
Net change during year		17	17	17	17	17	17	17
Carryover to next year (+/-)	30	47	64	81	98	115	132	149

B. Middle projection:

Total, all industries in EGR								
Year	2005	2006	2007	2008	2009	2010	2011	2012
Carryover from last year (+/-)		35	57	79	101	123	145	167
New demand during year		35	35	35	35	35	35	35
New production during year		22	22	22	22	22	22	22
Net migration during year		-9	-9	-9	-9	-9	-9	-9
Net change during year		22	22	22	22	22	22	22
Carryover to next year (+/-)	35	57	79	101	123	145	167	189

C. Upper projection:

Total, all industries in EGR								
Year	2005	2006	2007	2008	2009	2010	2011	2012
Carryover from last year (+/-)		40	67	94	121	148	175	202
New demand during year		40	40	40	40	40	40	40
New production during year		22	22	22	22	22	22	22
Net migration during year		-9	-9	-9	-9	-9	-9	-9
Net change during year		27	27	27	27	27	27	27
Carryover to next year (+/-)	40	67	94	121	148	175	202	229

Notes:

(1) A positive (+) carryover indicates a "shortage" of workers in this occupation. A negative (-) carryover indicates the opposite.

(2) This worksheet allows for "ranges" of estimates and projections in recognition of the fact that these values cannot be known with certainty. The meanings of the words "Lower," "Middle," and "Upper" are as follows:

A. "Lower" means that your EGR thinks the probablity is no more than 25% that the true value lies below it.

B. "Middle" means that your EGR thinks the probability is about equal that the true value lies either below it or above it.

C. "Upper" means that your EGR thinks the probablity is no more than 25% that the true value lies above it.

Demand Side Worksheet

EGR Name:	EGR7
Occupation Name:	Maintenance Workers, Machinery
Occupation SOC:	49-9043

1. Estimated Job vacancies, end of 2005

Lower estimate	3
Middle estimate	14
Upper estimate	25

2. Projected number of job openings annually due to growth and net replacements:

Year	2006	2007	2008	2009	2010	2011	2012
A. Lower projection:							
Total, all industries in EGR	3	3	3	3	3	3	3
326 Plastics and Rubber Products Manufacturing	1	1	1	1	1	1	1
310 Manufacturing	2	2	2	2	2	2	2
B. Middle projection:							
Total, all industries in EGR	14	14	14	14	14	14	14
310 Manufacturing	14	14	14	14	14	14	14
C. Upper projection:							
Total, all industries in EGR	25	25	25	25	25	25	25
310 Manufacturing	25	25	25	25	25	25	25

Notes:

This worksheet allows for "ranges" of estimates and projections in recognition of the fact that these values cannot be known with certainty. The meanings of the words "Lower," "Middle," and "Upper" are as follows:

A. "Lower" means that your EGR thinks the probablity is no more than 25% that the true value lies below it.

B. "Middle" means that your EGR thinks the probability is about equal that the true value lies either below it or above it.

C. "Upper" means that your EGR thinks the probablity is no more than 25% that the true value lies above it.

Notes: Due to confidentiality, primary data used to estimate middle and upper projections was aggregated to manufacturing as a whole. State and National projections, calibrated to EGR7, were believed to be low and used as EGR7's lower projection.

Supply Side Worksheet #1 ("Production")

EGR Name:	EGR7						
Occupation Name:	Maintenance Workers, Machinery						
Occupation SOC:	49-9043						
Projected "production" of new entrants into this occupation, by year							
Year	2006	2007	2008	2009	2010	2011	2012
a. Graduates/completers of education and training programs in this EGR:							
Ivy Tech	17	17	17	17	17	17	17
Indiana State University	3	3	3	3	3	3	3
etc. (add as necessary)							
b. Other sources of entrants (other than in-migration)							
n/a							
n/a							
c. Total new supply	20	20	20	20	20	20	20

Supply Side Worksheet #2 ("Migration")

EGR Name:	EGR7						
Occupation Name:	Maintenance Wrokers, Machinery						
Occupation SOC:	49-9043						
Year	2006	2007	2008	2009	2010	2011	2012
1. Projected IN-migration of workers in this occupation to this EGR, by year							
a. From outside this EGR	0	0	0	0	0	0	0
b. From other occupations	0	0	0	0	0	0	0
2. Projected OUT-migration of workers in this occupation to this EGR, by year							
a. To places outside this EGR	5	5	5	5	5	5	5
b. Into other occupations	5	5	5	5	5	5	5
3. Net IN-Migration	-10	-10	-10	-10	-10	-10	-10

Worksheet for Calculating Shortages or Surpluses of One Occupation

EGR Name:	EGR7
Occupation Name:	Maingenance Workers: Machinery
Occupation SOC:	49-9043

A. Lower projection:

Total, all industries in EGR

Year	2005	2006	2007	2008	2009	2010	2011	2012
Carryover from last year (+/-)		3	-4	-11	-18	-25	-32	-39
New demand during year		3	3	3	3	3	3	3
New production during year		20	20	20	20	20	20	20
Net migration during year		-10	-10	-10	-10	-10	-10	-10
Net change during year		-7	-7	-7	-7	-7	-7	-7
Carryover to next year (+/-)	3	-4	-11	-18	-25	-32	-39	-46

B. Middle projection:

Total, all industries in EGR

Year	2005	2006	2007	2008	2009	2010	2011	2012
Carryover from last year (+/-)		14	18	22	26	30	34	38
New demand during year		14	14	14	14	14	14	14
New production during year		20	20	20	20	20	20	20
Net migration during year		-10	-10	-10	-10	-10	-10	-10
Net change during year		4	4	4	4	4	4	4
Carryover to next year (+/-)	14	18	22	26	30	34	38	42

C. Upper projection:

Total, all industries in EGR

Year	2005	2006	2007	2008	2009	2010	2011	2012
Carryover from last year (+/-)		25	40	55	70	85	100	115
New demand during year		25	25	25	25	25	25	25
New production during year		20	20	20	20	20	20	20
Net migration during year		-10	-10	-10	-10	-10	-10	-10
Net change during year		15	15	15	15	15	15	15
Carryover to next year (+/-)	25	40	55	70	85	100	115	130

Notes:

(1) A positive (+) carryover indicates a "shortage" of workers in this occupation. A negative (-) carryover indicates the opposite.

(2) This worksheet allows for "ranges" of estimates and projections in recognition of the fact that these values cannot be known with certainty. The meanings of the words "Lower," "Middle," and "Upper" are as follows:

A. "Lower" means that your EGR thinks the probablity is no more than 25% that the true value lies below it.

B. "Middle" means that your EGR thinks the probability is about equal that the true value lies either below it or above it.

C. "Upper" means that your EGR thinks the probablity is no more than 25% that the true value lies above it.

Demand Side Worksheet

EGR Name:	EGR7
Occupation Name:	Electrical and Electronics Repairers, Commercial and Industrial Equipment
Occupation SOC:	49-2094

1. Estimated Job vacancies, end of 2005

Lower estimate	4
Middle estimate	14
Upper estimate	25

2. Projected number of job openings annually due to growth and net replacements:

Year	2006	2007	2008	2009	2010	2011	2012
A. Lower projection:							
Total, all industries in EGR	4	4	4	4	4	4	4
310 Manufacturing	2	2	2	2	2	2	2
325 Chemical Manufacturing	2	2	2	2	2	2	2
B. Middle projection:							
Total, all industries in EGR	14	14	14	14	14	14	14
310 Manufacturing	14	14	14	14	14	14	14
C. Upper projection:							
Total, all industries in EGR	25	25	25	25	25	25	25
310 Manufacturing	25	25	25	25	25	25	25

Notes:

This worksheet allows for "ranges" of estimates and projections in recognition of the fact that these values cannot be known with certainty. The meanings of the words "Lower," "Middle," and "Upper" are as follows:

A. "Lower" means that your EGR thinks the probablity is no more than 25% that the true value lies below it.

B. "Middle" means that your EGR thinks the probability is about equal that the true value lies either below it or above it.

C. "Upper" means that your EGR thinks the probablity is no more than 25% that the true value lies above it.

Notes: Due to confidentiality, primary data used to estimate middle and upper projections was aggregated to manufacturing as a whole. State and National projections, calibrated to EGR7, were believed to be low and used as EGR7's lower projection.

Supply Side Worksheet #1 ("Production")

EGR Name: EGR7
Occupation Name: Electrical and Electronics Repairers, Commercial and Industrial Equipment
Occupation SOC: 49-2094

Projected "production" of new entrants into this occupation, by year							
Year	2006	2007	2008	2009	2010	2011	2012
a. Graduates/completers of education and training programs in this EGR:							
Ivy Tech	10	10	10	10	10	10	10
b. Other sources of entrants (other than in-migration)							
n/a	0	0	0	0	0	0	0
n/a	0	0	0	0	0	0	0
etc. (add as necessary)							
c. Total new supply	**10**	**10**	**10**	**10**	**10**	**10**	**10**

Supply Side Worksheet #2 ("Migration")

EGR Name: EGR7
Occupation Name: Electrical and Electronics Repairers, Commercial and Industrial Equipment
Occupation SOC: 49-2094

Year	2006	2007	2008	2009	2010	2011	2012
1. Projected IN-migration of workers in this occupation to this EGR, by year							
a. From outside this EGR	0	0	0	0	0	0	0
b. From other occupations	0	0	0	0	0	0	0
2. Projected OUT-migration of workers in this occupation to this EGR, by year							
a. To places outside this EGR	2	2	2	2	2	2	2
b. Into other occupations	0	0	0	0	0	0	0
3. Net IN-Migration	-2	-2	-2	-2	-2	-2	-2

Worksheet for Calculating Shortages or Surpluses of One Occupation

EGR Name:	EGR7
Occupation Name:	Electrical and Electronics Repairers, Commercial and Industrial Equipment
Occupation SOC:	49-2094

A. Lower projection:

Total, all industries in EGR

Year	2005	2006	2007	2008	2009	2010	2011	2012
Carryover from last year (+/-)		4	0	-4	-8	-12	-16	-20
New demand during year		4	4	4	4	4	4	4
New production during year		10	10	10	10	10	10	10
Net migration during year		-2	-2	-2	-2	-2	-2	-2
Net change during year		-4	-4	-4	-4	-4	-4	-4
Carryover to next year (+/-)	4	0	-4	-8	-12	-16	-20	-24

B. Middle projection:

Total, all industries in EGR

Year	2005	2006	2007	2008	2009	2010	2011	2012
Carryover from last year (+/-)		14	20	26	32	38	44	50
New demand during year		14	14	14	14	14	14	14
New production during year		10	10	10	10	10	10	10
Net migration during year		-2	-2	-2	-2	-2	-2	-2
Net change during year		6	6	6	6	6	6	6
Carryover to next year (+/-)	14	20	26	32	38	44	50	56

C. Upper projection:

Total, all industries in EGR

Year	2005	2006	2007	2008	2009	2010	2011	2012
Carryover from last year (+/-)		25	42	59	76	93	110	127
New demand during year		25	25	25	25	25	25	25
New production during year		10	10	10	10	10	10	10
Net migration during year		-2	-2	-2	-2	-2	-2	-2
Net change during year		17	17	17	17	17	17	17
Carryover to next year (+/-)	25	42	59	76	93	110	127	144

Notes:

(1) A positive (+) carryover indicates a "shortage" of workers in this occupation. A negative (-) carryover indicates the opposite.

(2) This worksheet allows for "ranges" of estimates and projections in recognition of the fact that these values cannot be known with certainty. The meanings of the words "Lower," "Middle," and "Upper" are as follows:

A. "Lower" means that your EGR thinks the probablity is no more than 25% that the true value lies below it.

B. "Middle" means that your EGR thinks the probability is about equal that the true value lies either below it or above it.

C. "Upper" means that your EGR thinks the probablity is no more than 25% that the true value lies above it.

Demand Side Worksheet

EGR Name:	EGR7
Occupation Name:	First-Line Supervisors/Managers of Mechanics, Installers, and Repairers
Occupation SOC:	49-1011

1. Estimated Job vacancies, end of 2005

Lower estimate	16
Middle estimate	24
Upper estimate	33

2. Projected number of job openings annually due to growth and net replacements:

Year	2006	2007	2008	2009	2010	2011	2012
A. Lower projection:							
Total, all industries in EGR	16	16	16	16	16	16	16
310 Manufacturing	4	4	4	4	4	4	4
326 Plastics and Rubber Products Manufacturing	3	3	3	3	3	3	3
B. Middle projection:							
Total, all industries in EGR	24	24	24	24	24	24	24
310 Manufacturing	24	24	24	24	24	24	24
C. Upper projection:							
Total, all industries in EGR	33	33	33	33	33	33	33
310 Manufacturing	33	33	33	33	33	33	33

Notes:

This worksheet allows for "ranges" of estimates and projections in recognition of the fact that these values cannot be known with certainty. The meanings of the words "Lower," "Middle," and "Upper" are as follows:

A. "Lower" means that your EGR thinks the probablity is no more than 25% that the true value lies below it.

B. "Middle" means that your EGR thinks the probability is about equal that the true value lies either below it or above it.

C. "Upper" means that your EGR thinks the probablity is no more than 25% that the true value lies above it.

Notes: Due to confidentiality, primary data used to estimate middle and upper projections was aggregated to manufacturing as a whole. State and National projections, calibrated to EGR7, were believed to be low and used as EGR7's lower projection.

Supply Side Worksheet #1 ("Production")

EGR Name:	EGR7						
Occupation Name:	First-Line Supervisors/Managers of Mechanics, Installers, and Repairers						
Occupation SOC:	49-1011						
Projected "production" of new entrants into this occupation, by year							
Year	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**
a. Graduates/completers of education and training programs in this EGR:							
Indiana State University	17	17	17	17	17	17	17
b. Other sources of entrants (other than in-migration)							
n/a	0	0	0	0	0	0	0
n/a	0	0	0	0	0	0	0
c. Total new supply	**17**	**17**	**17**	**17**	**17**	**17**	**17**

Supply Side Worksheet #2 ("Migration")

EGR Name:	EGR7						
Occupation Name:	First-Line Supervisors/Managers of Mechanics, Installers, and Repairers						
Occupation SOC:	49-1011						
Year	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**
1. Projected IN-migration of workers in this occupation to this EGR, by year							
a. From outside this EGR	0	0	0	0	0	0	0
b. From other occupations	0	0	0	0	0	0	0
2. Projected OUT-migration of workers in this occupation to this EGR, by year							
a. To places outside this EGR	4	4	4	4	4	4	4
b. Into other occupations	0	0	0	0	0	0	0
3. Net IN-Migration	-4	-4	-4	-4	-4	-4	-4

Worksheet for Calculating Shortages or Surpluses of One Occupation

EGR Name:	EGR7
Occupation Name:	First-Line Supervisors/Managers of Mechanics, Installers, and Repairers
Occupation SOC:	49-1011

A. Lower projection:

Total, all industries in EGR

Year	2005	2006	2007	2008	2009	2010	2011	2012
Carryover from last year (+/-)		16	19	22	25	28	31	34
New demand during year		16	16	16	16	16	16	16
New production during year		17	17	17	17	17	17	17
Net migration during year		-4	-4	-4	-4	-4	-4	-4
Net change during year		3	3	3	3	3	3	3
Carryover to next year (+/-)	16	19	22	25	28	31	34	37

B. Middle projection:

Total, all industries in EGR

Year	2005	2006	2007	2008	2009	2010	2011	2012
Carryover from last year (+/-)		24	35	46	57	68	79	90
New demand during year		24	24	24	24	24	24	24
New production during year		17	17	17	17	17	17	17
Net migration during year		-4	-4	-4	-4	-4	-4	-4
Net change during year		11	11	11	11	11	11	11
Carryover to next year (+/-)	24	35	46	57	68	79	90	101

C. Upper projection:

Total, all industries in EGR

Year	2005	2006	2007	2008	2009	2010	2011	2012
Carryover from last year (+/-)		33	53	73	93	113	133	153
New demand during year		33	33	33	33	33	33	33
New production during year		17	17	17	17	17	17	17
Net migration during year		-4	-4	-4	-4	-4	-4	-4
Net change during year		20	20	20	20	20	20	20
Carryover to next year (+/-)	33	53	73	93	113	133	153	173

Notes:

(1) A positive (+) carryover indicates a "shortage" of workers in this occupation. A negative (-) carryover indicates the opposite.

(2) This worksheet allows for "ranges" of estimates and projections in recognition of the fact that these values cannot be known with certainty. The meanings of the words "Lower," "Middle," and "Upper" are as follows:

A. "Lower" means that your EGR thinks the probablity is no more than 25% that the true value lies below it.

B. "Middle" means that your EGR thinks the probability is about equal that the true value lies either below it or above it.

C. "Upper" means that your EGR thinks the probablity is no more than 25% that the true value lies above it.

Life Sciences Industry

The Life Sciences Sector

A 2002 study by the Battelle Memorial Institute, one of the world's largest research enterprises that Indiana has a significant asset base through which it can participate as a global player in the life sciences. This study calls for the central Indiana region "to have a comprehensive and integrated strategy to ensure success by attracting and retaining a critically skilled life sciences work force strategically marketing the region as a world-class health and life sciences hub.

In speaking to the Board of Directors of the THEDC, Dave Johnson, President and CEO of BioCrossroads, stated that "Indiana gained jobs in the life sciences at more than twice the rate of the nation from 2001-2003, rising 4.5 percent compared with the 2 percent national increase. In total, more than 578,000 Indiana jobs are directly or indirectly tied to the health industry and account for more than $21 billion in wages."

A 2002 report "Industrial Concentration and Specialization Scan for the Western Indiana Regional Economy, the Foundation for a Cluster-Based Economy," prepared by Regional Technology Strategies of Carrboro, North Carolina, identified pharmaceuticals as an existing cluster. At that time, ranking 10th in size among the region's benchmark clusters, with 1,349 employees, "pharmaceuticals had the highest employment location quotient: 5.87." Between 1990 and 2000 this concentration saw a slight decline, falling from 5.98 in 1990. The Cluster's establishment location quotient of 3.33 is also among the highest among the region's benchmark clusters, and has increased slightly from the 1990 LQ of 3.0."

A Report Prepared by Thomas P. Miller and Associates and Hudson Institute for The Indiana Health Industry Forum, 05/15/03, identifies two major health sectors: healthcare delivery and medical manufacturing. The report includes producers of pharmaceuticals and of medical devices and related research facilities under *Medical Manufacturing,* areas in which EGR 7 has a strong presence. This report indicated that "gaps confronting employers in medical manufacturing is insufficient attraction and retention of workers qualified for critical positions." They also offered that "workforce gaps occur and are likely to increase in the near future if preventative initiatives are not launched soon."

The greater Terre Haute area contains numerous life science assets. These assets include major corporations such as Eli Lilly Clinton Labs, Pfizer, Schering-Plough Animal Research Facility; Tredegar Corporation, Glas-Col, North American Latex Corp, Union Hospital Health Group, Terre Haute Regional Hospital, the Associated Physicians & Surgeons Clinic with 11 area facilities, Hamilton Center with several facilities, the Midwest Center for Rural Health, the Landsbaum Center for Health Education, and the Wabash Valley Advanced Manufacturing Cluster. In addition, EGR 7 is served by the Wabash Valley Education Alliance, a group of educational institutions in west central Indiana and including, Indiana State University, the IU School of Medicine's Regional Campus, Ivy Tech Community College, Rose-Hulman Institute of Technology and Rose-Hulman Ventures, Saint Mary-of-the-Woods College, and the Vigo County School Corporation.

It is obvious that the life sciences and the industries in which they are located are significantly important to the EGR 7. Chemical manufacturing activities include some of the highest wage occupations in the regions and pharmaceutical manufacturing is a major contributor to our economy. A recent DWD report indicates that Chemical Manufacturing (NAICA 325) is projected to increase 11.2 % in jobs in the ten-year period from 2002-2012, and that along with Plastics and Rubber Products projected to increase 11.0 %, total projected numerical increase in these two industries combines is over 9,000 jobs in Indiana.

Primary research secured in face-to-face settings, interviews, telephone conversations, and focus groups leads us to believe that it is possible that estimates for jobs in the life sciences will be significantly higher for the next several years in EGR7. Pending approval of new products to be produced in this region would require a large number of new employees in life sciences occupations, the largest of which could be Chemical Technicians or Biological Technicians. Immediate numbers could approach up to 100 new positions the first year, with some of these jobs requiring bachelor's degrees and a greater number of associates degrees in the sciences. The position of Chemical Technicians most closely resembles the description we have been provided regarding these positions. Any breakthrough in pharmaceutical production will require workers with these skills.

The O-Net Skill Sets Report provides the following information:

Occupation: 19-4031.00,Chemical Technicians, General Description: Conduct chemical and physical laboratory tests to assist scientists in making qualitative and quantitative analyses of solids, liquids, and gaseous materials for purposes, such as research and development of new products or processes, quality control, maintenance of environmental standards, and other work involving experimental, theoretical, or practical application of chemistry and related sciences.

Sample of Reported Job Titles: Lab Tech (Laboratory Technician), Research Technician, Lab Tester (Laboratory Tester), Research and Development Technician, Chemical Technician, Formulation Technician, Lab Analyst (Laboratory Analyst), Research Associate.

ONet Related Occupational Skills: The most important knowledge, skills, and abilities are: **Knowledge** - of chemical composition, structure, and properties of substances and the chemical processes and transformations they undergo; the uses of chemicals and their interactions, danger signs, production techniques, and disposal methods. English Language- speaking and writing skills, know meaning of words and rules of composition; Mathematics- arithmetic; algebra, geometry, and their applications; Mechanical – knowledge of machines and tools, including their designs, uses, repair, and maintenance; Computer and Electronics – knowledge of circuit boards, processors, chips, electronic equipment, and computer hardware and software, including applications and programming.

Skills: Science – Using scientific rules and methods to solve problems; Reading Comprehension – Understanding written sentences and paragraphs in work related documents; Quality Control Analysis – conducting tests and inspections of products, services, or processes to evaluate quality or performance; Mathematics – Using mathematics to solve problems; Operation Monitoring - Watching gauges, dials, or other indicators to make sure a machine is working properly.

Abilities: Deductive Reasoning- The ability to apply general rules to specific problems to produce answers that make sense. Near Vision – The ability to see details at close range (within a few feet of the observer). Information Ordering – The ability to arrange things or actions in a certain order or pattern according to a specific rule or set of rules (e.g., patterns of numbers, of letters, words, pictures, mathematical operations). Problem Sensitivity - the ability to tell when something is wrong or is likely to go wrong. It does not involve solving the problem, only recognizing there is a problem. Written Comprehension – The ability to read and understand information and ideas presented in writing.

Job Availability - State and national trends for Chemical technicians project national changes of +5% on a 2002 job base of 69,000, growing to 72,300 by 1012, with 2040 annual job openings due to growth and replacement. In Indiana the 2002 employment base was 1,740 with projections of 1,930 in 2012, project job growth of 60 annual job openings due to replacement and growth, or +11 percent change by 2012.

Chemical Technician Annual Wages -

	10%	**25%**	**Median**	**75%**	**90%**
US	**$23,200**	**29,400**	**37,600**	**47,300**	**57,100**
Indiana	**$22,500**	**26,800**	**34,000**	**41,800**	**48,300**

Wages for these positions in the top 75% level and above are equal to and above the average wages earned in EGR 7. Even though Indiana wages are somewhat below national averages, the projected Indiana wages are attractive. Information on Supply and Demand in the Chemical Technician job category and skills gaps/shortages are included below.

Demand Side Worksheet

EGR Name:	EGR7
Occupation Name:	Chemical Technicians
Occupation SOC:	19-4031

1. Estimated Job vacancies, end of 2005

Lower estimate	5
Middle estimate	30
Upper estimate	70

Year	2006	2007	2008	2009	2010	2011	2012
A. Lower projection:							
Total, all industries in EGR	4	4	4	4	4	4	4
325 Chemcial	4	4	4	4	4	4	4
B. Middle projection:							
Total, all industries in EGR	30	20	10	5	5	5	5
325 Chemcial	30	20	10	5	5	5	5
C. Upper projection:							
Total, all industries in EGR	70	30	20	20	20	20	20
325 Chemcial	70	30	20	20	20	20	20

Notes:

This worksheet allows for "ranges" of estimates and projections in recognition of the fact that these values cannot be known with certainty. The meanings of the words "Lower," "Middle," and "Upper" are as follows:

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B. "Middle" means that your EGR thinks the probability is about equal that the true value lies either below it or above it.

C. "Upper" means that your EGR thinks the probablity is no more than 25% that the true value lies above it.

Supply Side Worksheet #1 ("Production")

EGR Name:	EGR7						
Occupation Name:	Chemical Technicians						
Occupation SOC:	19-4031						
Projected "production" of new entrants into this occupation, by year							
Year	2006	2007	2008	2009	2010	2011	2012
a. Graduates/completers of education and training programs in this EGR:							
ISU Life Sciences: Microbiology	2	2	2	2	2	2	2
ISU Chemistry	6	6	6	6	6	6	6
ISU Clinical Laboratory Science	4	4	4	4	4	4	4
Ivy Tech Biotechnology	9	9	15	15	15	15	15
ISU Life Sciences	25	25	25	25	25	25	25
b. Other sources of entrants (other than in-migration)							
c. Total new supply	46	46	52	52	52	52	52

Supply Side Worksheet #2 ("Migration")

EGR Name:	EGR7						
Occupation Name:	Chemical Technicians						
Occupation SOC:	19-4031						
Year	2006	2007	2008	2009	2010	2011	2012
1. Projected IN-migration of workers in this occupation to this EGR, by year							
a. From outside this EGR	0	0	0	0	0	0	0
b. From other occupations	0	0	0	0	0	0	0
2. Projected OUT-migration of workers in this occupation to this EGR, by year							
a. To places outside this EGR	13	13	13	13	13	13	13
b. Into other occupations	13	13	13	13	13	13	13
3. Net IN-Migration	-26	-26	-26	-26	-26	-26	-26

Worksheet for Calculating Shortages or Surpluses of One Occupation

EGR Name: EGR7
Occupation Name: Chemical Technician
Occupation SOC: 19-4031

A. Lower projection:

Total, all industries in EGR

Year	2005	2006	2007	2008	2009	2010	2011	2012
Carryover from last year (+/-)		5	-11	-27	-49	-71	-93	-115
New demand during year		4	4	4	4	4	4	4
New production during year		46	46	52	52	52	52	52
Net migration during year		-26	-26	-26	-26	-26	-26	-26
Net change during year		-16	-16	-22	-22	-22	-22	-22
Carryover to next year (+/-)	5	-11	-27	-49	-71	-93	-115	-137

B. Middle projection:

Total, all industries in EGR

Year	2005	2006	2007	2008	2009	2010	2011	2012
Carryover from last year (+/-)		30	40	40	24	3	-18	-39
New demand during year		30	20	10	5	5	5	5
New production during year		46	46	52	52	52	52	52
Net migration during year		-26	-26	-26	-26	-26	-26	-26
Net change during year		10	0	-16	-21	-21	-21	-21
Carryover to next year (+/-)	30	40	40	24	3	-18	-39	-60

C. Upper projection:

Total, all industries in EGR

Year	2005	2006	2007	2008	2009	2010	2011	2012
Carryover from last year (+/-)		70	120	130	124	118	112	106
New demand during year		70	30	20	20	20	20	20
New production during year		46	46	52	52	52	52	52
Net migration during year		-26	-26	-26	-26	-26	-26	-26
Net change during year		50	10	-6	-6	-6	-6	-6
Carryover to next year (+/-)	70	120	130	124	118	112	106	100

Notes:

(1) A positive (+) carryover indicates a "shortage" of workers in this occupation. A negative (-) carryover indicates the opposite.

(2) This worksheet allows for "ranges" of estimates and projections in recognition of the fact that these values cannot be known with certainty. The meanings of the words "Lower," "Middle," and "Upper" are as follows:

A. "Lower" means that your EGR thinks the probablity is no more than 25% that the true value lies below it.

B. "Middle" means that your EGR thinks the probability is about equal that the true value lies either below it or above it.

C. "Upper" means that your EGR thinks the probablity is no more than 25% that the true value lies above it.

Appendix

ATTACHMENT A

Support Letter Received*

The Wabash Valley Advanced Manufacturing Cluster

Lilly Clinton Laboratories

Great Dane Trailers

Smiths Aerospace Components

Terre Haute Regional Hospital

Pfister and Company, Inc.

Growers Co-op

The Greencastle and Putnam County Area Economic Development Center

The Greater Greencastle Chamber of Commerce

The Terre Haute Economic Development Corporation

Rose-Hulman Institute of Technology

Ivy Tech Community College

Indiana State University

Western Indiana Employment and Training Services, Inc.

* Hard copies of these letters are enclosed in the hard copy of this report sent to the IDWD.